

American Society for Testing Materials BULLETIN

ISSUED



BI MONTHLY

Thirty-Fifth Annual Meeting

Atlantic City, June 20-24

Symposium on Steel Castings

Session on Textile Materials

Round Table Discussion on Acquisition of Good Data

Papers on Metals, Cement, Concrete, Testing and
Testing Apparatus, and others

Reports of Committees

*Provisional Program Appears in This
Issue. See page 4*

April, 1932

ENGINEERS' CLUB BUILDING
1315 SPRUCE ST., PHILADELPHIA

RELIABILITY ACCURACY SENSITIVENESS

are outstanding characteristics
of
OLSEN

Pendulum Dial Load Indicator
and Lever Weighing System
Universal Testing Machines

*In all capacities, from small wire testers
to the largest machines for testing
structural units.*

WITH

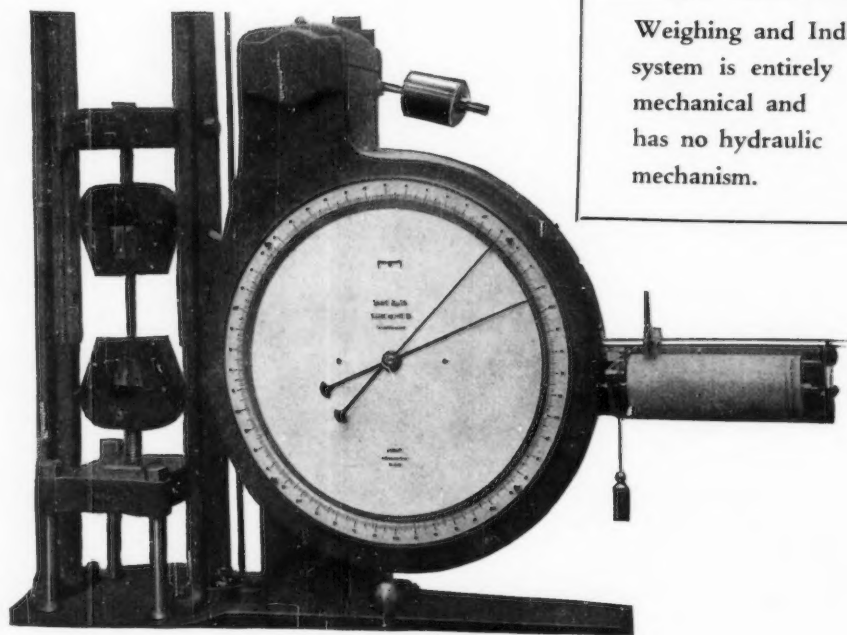
↑ HYDRAULIC LOADING

OR

SCREW POWER AND GEAR BOX DRIVE ↑

Large
indicating dial
has pointers
making two
revolutions to
indicate maximum
capacity, giving
close readings—
equivalent to dial
twice as large.

Made in dual,
triple, or quadruple
capacity reading,
and with or
without recorder.



Weighing and Indicating
system is entirely
mechanical and
has no hydraulic
mechanism.

Further information supplied on request stating requirements.

TINIUS OLSEN TESTING MACHINE COMPANY

500 NORTH 12th STREET

PHILADELPHIA, PA.

American Society for Testing Materials



BULLETIN

ENGINEERS' CLUB BUILDING

1315 SPRUCE STREET

PHILADELPHIA, PA.

NUMBER 56

APRIL 30, 1932

Thirty-fifth Annual Meeting to be Interesting One

Chalfonte-Haddon Hall, Atlantic City, June 20-24

ONE can gain no better perspective of the interesting features planned for the Thirty-fifth Annual Meeting, which is to be held this year in Atlantic City, June 20-24, than to examine the Provisional Program which begins on page 4 of this BULLETIN. It will be noted that fourteen sessions are planned, five pairs of which are scheduled to run simultaneously. Round table discussions on the subject "Acquisition of Good Data" are scheduled for Monday afternoon and evening, with the first technical session listed for Tuesday morning at 10 o'clock. The remaining sessions will follow each morning, afternoon, and evening with certain exceptions discussed here. The plan of having the Edgar Marburg Lecture given on Wednesday afternoon to be followed by the A.S.T.M. dinner and annual dance and smoker in the evening, which worked so successfully last year in Chicago, is again being followed. Thursday afternoon will see the annual golf and tennis tournaments in full swing. There will be no technical sessions during these periods. All of Monday, Wednesday afternoon until 4 o'clock, and Thursday afternoon will be available for committee meetings.

Technical Sessions

The individual papers listed in the Provisional Program, which this year for the first time appears in the BULLETIN (see page 4) instead of in booklet form, are of the same high calibre which have characterized previous A.S.T.M. technical contributions.

It will be noted that there are papers covering important aspects of metals, cement, concrete, and testing and testing apparatus. Other important engineering materials fields are involved in the many other interesting papers.

Two joint sessions sponsored by the American Foundrymen's Association and the Society are to be held on Tuesday afternoon and evening in which groups of papers comprising a Symposium on Steel Castings are listed. This Symposium is another in the series planned by the two societies to make available critical data on the engineering properties of castings. Ten papers will be presented by outstanding experts in this field.

The session on textile materials, sponsored by the Society's Committee D-13, will be held Tuesday afternoon. Several

years have elapsed since an annual meeting session has been exclusively devoted to textiles and accordingly the very interesting one planned for this year is awaited with much interest. Eight papers are listed for presentation.

With millions of dollars being spent annually by American industry for research work and the subsequent compilation of data, the round table discussions on Monday involving the subject "Acquisition of Good Data" assume a place of importance. This subject is one to which technical men are paying more and more attention. The round table discussions will not only point out the application of general principles of the subject to A.S.T.M. work, but also in a broader way. Five informal papers will be presented during the first discussion on Monday afternoon, and three are listed for the evening gathering. In addition, three formal papers will be given during regular sessions of the meetings.

Several unusually interesting committee reports will be presented in the various sessions, among which the report of the investigation of structural steel embrittlement due to hot galvanizing is noteworthy.

Written Discussion

It is important that all written discussions shall be placed in the hands of the Assistant Secretary prior to the session at which they are to be presented. Such written discussions take precedence over oral. For both types the speakers will, in general, be limited to five minutes, but this time may be extended at the discretion of the chair, or by vote of the meeting. Written discussions requiring more than five minutes for presentation shall be accompanied by an abstract and at the discretion of the chair shall be presented in abstract only.

Preprints

For distributing preprints, practically the same plan in effect for the past few years will again be followed. Members will receive in advance of the meeting only those committee reports and papers which they have requested. A request blank for preprints in which the papers and reports are listed is enclosed to all members of the Society in good standing. Abstracts of most of the reports and papers are included in

A Request Blank

is enclosed for use in securing
preprints of Reports and Papers.

*Hotel Reservations
Should be Made at Once*

Provisional Program for Thirty-fifth Annual Meeting Begins on Page 4

the Provisional Program on pages 4 to 9 of this BULLETIN. These abstracts should be of assistance in making a selection of the items desired. The blank should be used to indicate those preprints which are desired. These will be forwarded as they become available, in two or three installments. **Preprints will not be mailed to members unless requested.**

Members attending the annual meeting will receive as they register copies of such preprints as they may request.

Hotel Reservations and Advance Registration

Hotel reservations should be made promptly. Members are requested to use the enclosed return blank addressed to the hotel management in making reservations. Rooms may be secured on either the American or European plan. The hotel rates given in the March BULLETIN are repeated on this blank.

It is requested that members fill out and mail promptly the accompanying advance registration card.

Reduced Railroad Rates

The passenger associations have granted reduced rates for transportation to Atlantic City on the identification certificate plan. Round trip tickets will be sold at one and one-half single fare to holders of identification certificates who plan to go and return by the same route and three-fourths of the fare each way, going and returning by a different route. Both plans have a return limit of 30 days from date of sale. The date of sale ranges from June 14 to 22, depending on the distance from Atlantic City. The certificates will be mailed to the members late in May and may be used only by them and dependent members of their families. Companies, firms, etc., holding corporate Society membership which desire to send more than one individual to represent them at the annual meeting can secure a certificate for each additional representative. Requests for additional certificates giving the names of individuals for whose use they are intended should be sent to the Society. Certificates must be presented when tickets are purchased and all classes of tickets must be validated at Atlantic City to be honored for the return trip.

Attention of the members is called to the unusual number of excursions which are scheduled by the railroads for the summer season. From certain localities the excursion rates are even lower than those granted on the certificate plan. Accordingly, some may wish to investigate these rates.

Meeting Rooms

All of the sessions of the meeting, with the possible exception of the Edgar Marburg Lecture, will be held on the thirteenth floor of Haddon Hall which has been designated by the hotel, "meeting room floor." The Viking Room and Benjamin West Room will be used for the sessions.

The rooms in which the Lecture will be given and the Dinner held will be announced later.

The registration desk will be located in the Mandarin Room. The three Tower Rooms will be thrown into one and used for a men's lounge, and as a gathering place for the members. Most of the committee meetings will be held in Haddon Hall, but some few will be scheduled for Chalfonte.

Dudley Medalist

The winner of the Charles B. Dudley Medal has been chosen by the Committee on Award. As a variation from

the usual plan of announcing the winner in the BULLETIN and program in advance of the annual meeting, it has been decided to withhold the identity of the winner this year until the time of the award. The winner will be presented with the medal at the A.S.T.M. Dinner on Wednesday.

Registration and Preprints

Members and visitors should register immediately upon their arrival. Members will be charged a registration fee of \$1 and they will receive an identification badge, and copies of preprints of such reports and papers as they request. A member will be construed as a person holding an individual membership in the Society or (a) a person who is the official representative of a company, firm or institution holding Society Membership, or (b) the official representative on a standing committee of a company, firm or institution holding membership on the committee.

Visitors will be charged a registration fee of \$1 and will likewise be supplied with a badge, and will have the privilege of securing the preprints for any one particular session of the annual meeting. If a visitor desires a complete set of preprints he may procure them by the payment of \$1 additional.

Ladies Registration

The ladies attending the annual meeting should register at the A.S.T.M. registration desk. Each lady will receive a convention pin and announcements regarding entertainment. There is no fee in connection with this registration.

Entertainment

The annual golf tournament will be held on Thursday afternoon, June 23. The annual tennis matches will also be played at this time. Further announcements regarding plans for these events will be made. The informal dance and smoker will be held on Wednesday evening following the Presidential Address and the award of the Dudley Medal, which events are to feature the A.S.T.M. Dinner. In addition to these scheduled features, it is unnecessary to mention the many opportunities which Atlantic City offers for entertainment and diversion.

Large Attendance at Detroit Joint Meeting

About 350 engineers, interested in various aspects of the automotive industry, attended the joint meeting of the A.S.T.M. members in the Detroit district and the Detroit chapters of the Society of Automotive Engineers and American Society for Steel Treating, held on March 28.

President Clements, chairman of the Detroit District Committee, which sponsored the meeting, presided during the presentation of the papers, each of which dealt with a specific factor involved in the subject "Service Testing of Automotive Products and Correlation with Laboratory Tests." Seven papers made up the technical session—each by an authority on his particular phase of the industry. These papers, with the executives who presented them, were listed in the March BULLETIN. The papers emphasized the great importance of the general subject and at the same time gave evidence of steps the industry is taking to improve its products. They also pointed out the value of carefully correlated tests, and in a general way, brought more intimately to those present the work of the Society.

The Use of A.S.T.M. Standards

IV. Specification Writers and Standards

VOLUMES of court testimony bear witness to the inadequacy or incompleteness of many specifications. The loss due to construction delay, court action, etc., is very costly. However, clearer specifications are resulting as better data become available, together with a realization of the real limitations of materials.

Some of the faults of ill-considered specifications are:

1. Unnecessary limitations due to ignorance of the properties governing successful and economic use of the material.
2. Ambiguity, resulting in continual controversy.
3. Inclusion of limitations which the supplier cannot meet because the origin of the trouble is beyond his control.
4. Unnecessarily out of line with standard or commercial practice.

The use of A.S.T.M. specifications and test methods for materials goes a long way toward the elimination of these undesirable factors. In formulating standards, the Society brings together technically trained men who study a given material thoroughly. From the very makeup of the several groups assigned to a specific field, producers, consumers and "general interests," and the trial stage which a proposed standard undergoes, its adequacy is assured. The producer contributes his experience in connection with a material; the consumer tests it in actual practice; and the scientist contributes basic data.

A.S.T.M. specifications are thus based on a thorough knowledge of the properties of a given material and the uses for which it is most suitable. Any ambiguous passages are "ironed out" by criticism during trial. The producer adds his knowledge of just where manufacturing problems may arise and offers solutions. The result is a satisfactory, usable, adequate specification.

The wide use of A.S.T.M. standards in specifications and contracts for construction projects, many of which have been listed in previous BULLETINS; the fact that many building and other codes refer to these standards—these are evidences of their worth. Specification writers will find them of much help and many now incorporate them by reference in their specifications.

A.S.T.M. standards are available in separate form and, too, in Books of Standards and Tentative Standards which give all those promulgated by the Society. Writers of specifications will find these very convenient, with carefully prepared indexes which at a glance show whether the Society has standards covering specific materials.

Cooperation with A.A.A.S.

Plans are being developed by the Society to cooperate with Section M (Engineering) of the American Association for the Advancement of Science in its meeting to be held in Atlantic City in December, 1932. Several papers on the various aspects of testing and specifying of materials of interest to engineers are to be sponsored by the Society. This cooperation with the A.A.A.S. should be of considerable value in focusing the attention of a prominent group of engineers on the work of the Society.

Joint Committee Changes Meeting Place

The Joint Committee on Concrete and Reinforced Concrete, which was to have met in Atlantic City on June 20 and 21, will instead meet at the Headquarters of the Society on those two days.

Professor Taylor to be Marburg Lecturer

"Fundamentals in the Problem of Resistance to Deterioration"

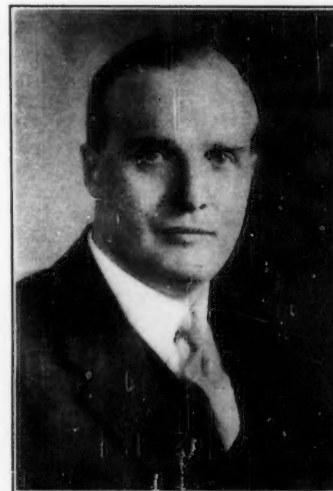
Professor Hugh Stott Taylor, who is David B. Jones Professor of Chemistry at Princeton University, has been chosen to deliver the Edgar Marburg Lecture at the 1932 Annual Meeting in Atlantic City. He will speak on the subject, "Fundamentals in the Problem of Resistance to Deterioration." It is difficult to conceive of an industry in which this topic, involving such deteriorating agencies as corrosion, wear, etc., is not of vital importance. Because of Professor Taylor's splendid qualifications for a lecture of this type, it will be awaited with great interest.

Professor Taylor is English by birth and was educated at the University of Liverpool, where he received the degree of B.S. in 1909, and M.Sc. in 1910. After three years of graduate work in Liverpool, Professor Taylor spent one year of post-graduate study at the Nobel Institute, Stockholm, under the renowned chemist, Professor Svante Arrhenius. A further year of study was spent in the Laboratory of the Technische Hochschule at Hanover with Professor Max Bodenstein. Upon completion of these studies, the University of Liverpool granted him the degree of Doctor of Science in 1914.

Professor Taylor was called to Princeton early in 1914 as Instructor in Physical Chemistry, and was made Assistant Professor in 1915. He was appointed Professor of Physical Chemistry in 1922, was made chairman of the Chemistry Department at Princeton in 1926, and appointed David B. Jones Professor of Chemistry in 1927.

Professor Taylor is Associate Editor of the *Journal of the American Chemical Society* of which Society he was the Nichols medalist in 1928; vice-president of the American Electrochemical Society; a member of the American Association for the Advancement of Science; German Bunsen-Gesellschaft. He is chairman of the Committee on Photochemistry of the National Research Council; a member of the Committee on Contact Catalysis, and author of two of its annual reports. During the past five years he has been chairman of the Central Petroleum Committee of the National Research Council and is now associated with the Research Fellowship Board of the Textile Foundation. He has recently been selected for admission to the Royal Society of London at the forthcoming May meeting.

Professor Taylor is the author of numerous texts and researches. With Dr. E. K. Rideal, he has compiled a text on "Catalysis in Theory and Practice." He has edited a "Treatise on Physical Chemistry," now in its second edition. Some one hundred papers, personally written or in collaboration with students, have been contributed to various scientific journals.



PROF. HUGH STOTT TAYLOR

PROVISIONAL PROGRAM

FOR THIRTY-FIFTH ANNUAL MEETING

Round Table Discussion **Monday, June 20**
2 P. M.

Acquisition of Good Data

The discussion will be introduced by the papers listed below.

Statistical Nature of A.S.T.M. Data. R. F. Passano.

Methods of Dealing with Discordant Observations. E. W. Washburn.

Criteria for Rejection of Observations. P. R. Rider.

Elimination of Systematic Errors. H. C. Dickinson.

What Can Statistical Theory Do Now and What Developments Are Necessary to Make It More Useful? E. F. Huntington.

8 P. M.

Acquisition of Good Data (Continued)

Specifications of Standards of Quality. N. F. Harriman.

Inspection Specifications. G. D. Edwards.

Need for Quality Control in Sampling Inspection. H. F. Dodge.



First Session **10 A. M.** **Tuesday, June 21**

Reports of Administrative Committees; Nomenclature and Testing

Opening Remarks by the President. F. O. Clements.

Minutes of the Thirty-fourth Annual Meeting.

Report of Committee E-6 on Papers and Publications. C. L. Warwick, Chairman.

Discusses publication policy and includes statistics on preprints and other publications.

Report of Committee E-9 on Correlation of Research. H. F. Moore, Chairman.

A review of the Society's research projects with notes on new research work planned or undertaken during the year.

Report of Committee E-10 on Standards. T. R. Lawson, Chairman.

Reports on new specifications and methods of test submitted under the procedure for acceptance and publication of tentative standards in the interim between annual meetings of the Society. Reviews standardization projects considered during the year.

Annual Report of the Executive Committee. C. L. Warwick, Secretary-Treasurer.

A general report of Society activities with particular reference to membership, publications, finances and administrative matters relating to committee activities and inter-society relations. Reports on organization of new standing committees.

Report of Committee E-1 on Methods of Testing. W. H. Fulweiler, Chairman.

Reports progress on methods of Rockwell hardness testing; revision of methods of tension testing of metallic materials; definitions of elastic limit and yield strength; and methods of measuring speed of testing. Reports organization of new section on calibration of testing machines and apparatus.

The Electric Strain Meter and Its Use in Measuring Internal Strains. R. E. Davis and R. W. Carlson.

Describes the electric strain meter and its use in measuring strains through change in resistance of coils of fine steel wire, a device of great possibilities for determining internal strains in concrete, since apparently its calibration is not affected by time.

Full-Load Calibration of a 600,000-lb. Testing Machine. H. F. Moore, J. C. Othus and G. N. Krouse.

Describes a full-load calibration of a 600,000-lb. screw-power machine carried out in the Materials Testing Laboratory of the University of Illinois. Two 10,000-lb. standard weights were used in connection with an elastic tension bar about 19 ft. long and 4 in. in diameter using a gage length of 100 in. and an extensometer sensitive to 0.00001 in.

An Automatic Autographic Extensometer for Use in Tensile Tests of Materials. R. L. Templin.

Describes a new type of recording extensometer which fulfills the desirable requirements indicated by present-day needs in making tension tests on materials. These requirements involve a consideration of magnification ratio, accuracy, sensitivity, size and shape of specimens, testing speeds, ease of operation, ruggedness of design, adaptability to various types and kinds of testing machines, and finally, cost.

Informal Report of Sectional Committee on Sieves for Testing Purposes. L. T. Work, Chairman.

Report of Committee E-8 on Nomenclature and Definitions. Cloyd M. Chapman, Chairman.

Reports progress in correlation of definitions of terms.

Miscellaneous Business.



Second Session **2 P. M.** **Tuesday, June 21**

Held Simultaneously with Third Session

Textile Materials

Report of Committee D-13 on Textile Materials. H. J. Ball, Chairman.

Announces organization of subcommittee on wool. Presents new tentative specifications for tolerances and test methods for tubular sleeving and braids. Presents revisions in specifications for tolerances and test methods for asbestos yarns; for cotton sewing threads; and for tire cord. Recommends adoption of specifications and tests for Cuban (jute) raw sugar bags and presents revisions in specifications and tolerances for rayon.

A Machine Test on the Durability of Manila Rope. M. C. Wiley.

Discusses the problem of setting limitations on grade of fiber used in rope without definite knowledge of the effect of durability of variations in grades. Presents a method of test for Manila rope. Describes the type of machine used. Describes various other types of machines and methods of test for determining durability.

Enzyme Action in the Textile Industries. W. F. Edwards.

Presents a brief historical résumé of the main facts, hypotheses and theories that have led up to the name "enzyme." Discusses the enzyme influence in the growth of fungi (principally varieties of *aspergillus* and *Penicillium*) producing mildew in cotton goods with especial reference to conditions of prevention. Presents some notes on analytical methods of estimating enzyme action.

Atmospheric Control in the Textile Industry. R. H. Brown.

Asbestos Textiles. C. K. Dillingham.

Presents a concise description of asbestos textiles with grades of fibers, processes of manufacture, constructions, qualities and uses. No attempt has been made to go into technical details but rather to present to those not familiar with the products a brief comparison between asbestos and other familiar textile fibers.

Provisional Program for Thirty-fifth Annual Meeting (Continued)

The Structure of Natural and Manufactured Cellulosic Fibers. H. DeW. Smith.

Basic discussion of composition of rayon and properties as affected thereby.

The Suter-Webb Cotton Fiber Duplex Sorter and Resulting Method of Staple and Uniformity Measurements. R. W. Webb.

Describes a machine for measuring the staple length and uniformity of cotton fibers and discusses the method of making the measurements.

Colorimeter and Method Employed in Color Testing of Cotton. Dorothy Nickerson.

Describes a colorimeter for use in measuring and grading agricultural products which can be adjusted to measure either a small or a large area. Discusses the method of measurement by the use of disk mixture of Munsell papers which permits the expression of results in terms which adequately approximate the psychological attributes: hue, brilliance and chroma.



Third Session 2 P. M. Tuesday, June 21

Held Simultaneously with Second Session

Symposium on Steel Castings

This symposium has been arranged to provide the engineering profession with authoritative data and information concerning the engineering properties of steel castings produced by the most widely used methods of molding, casting, use of alloys and heat treatment. Welding, which is rapidly assuming increasing importance in fabricating and repair problems, is discussed from the standpoint of a steel foundryman. The symposium is sponsored jointly by the A.S.T.M. and the A.F.A. The papers listed below cover subject matter which will be of particular interest to the users of carbon and alloy-steel castings.

(Joint Session with American Foundrymen's Association)

Introduction; General Survey of the Steel Castings Industry. W. C. Hamilton.

Statistics Covering Steel Castings. G. P. Rogers.

General Data on Steel Castings and Their Fields of Application Governed by the Various Physical Properties. C. E. Williams and C. H. Lorig.

Purchase Requirements for Steel Castings with Notes on Physical Properties in Test Bars and in Commercial Castings. R. A. Bull.

Symposium Continued in Fourth Session



Fourth Session 8 P. M. Tuesday, June 21

Symposium on Steel Castings

(Continued from Third Session)

(Joint Session with American Foundrymen's Association)

Development of Alloy Steels for Castings:

- (a) Representative Properties of Cast Medium Pearlitic Steels. Fred Grotts.
- (b) Iron-Chromium, Iron-Chromium-Nickel and Related Alloys. Jerome Strauss.
- (c) Austenitic Manganese Steel Castings. J. H. Hall.

Problems and Practices in the Heat Treatment of Steel Castings. A. W. Lorenz.

Fusion Welding as Related to Steel Castings. T. S. Quinn.

General Principles of Design as Related to Physical Properties, Soundness, and Ease of Production. F. A. Lorenz, Jr.

Fifth Session 9.30 A. M. Wednesday, June 22

Held Simultaneously with Sixth Session

Steel, Magnetics

Report of Committee A-4 on Heat Treatment of Iron and Steel. H. M. Boylston, Chairman.

Presents tentative revision of standard definitions of terms relating to heat treatment operations.

Report of Committee A-9 on Ferro-Alloys. N. B. Hoffman, Chairman.

Presents new tentative specifications for ferro-tungsten; for low-carbon ferro-molybdenum, and for molybdenum salts and compounds; also methods for the chemical analysis of ferro-tungsten and ferro-molybdenum.

Report of Committee A-10 on Iron-Chromium, Iron-Chromium-Nickel and Related Alloys. Jerome Strauss, Chairman.

Report of Committee A-1 on Steel. J. B. Young, Chairman.

Presents new tentative specifications for structural medium steel, structural rivet steel and electric-fusion-welded steel pipe. Recommends tentative revisions in standard specifications for concrete reinforcement bars; steel plates of flange and structural quality for forge welding; structural steel for buildings; steel tie plates; steel and iron boiler tubes. Proposes revisions in five specifications for fabricated pipe. Recommends withdrawal of standard specifications for extra-high-carbon-steel splice bars.

The Testing of Rope Wire and Wire Rope. A. V. de Forest and L. W. Hopkins.

Describes new and novel fatigue tests applied to wire and wire rope. The authors have been working on the subject for two years and have considerable information which makes an interesting paper.

Report of Sectional Committee on Standardization of Dimensions and Material of Wrought-Iron and Wrought-Steel Pipe and Tubing. H. H. Morgan, Chairman.

Reports preliminary draft of proposed specifications for wrought-iron and wrought-steel pipe for service up to 450° F. Reports on table of dimensions and weights of pipe for high-temperature service, and consideration being given to determining allowable stresses for materials used at temperatures above 750° F.

A Comparison of Methods of Determining the Efficiency of Deoxidation in Steel with Special Reference to Zirconium as a Deoxidizing Agent. H. L. Coles and J. R. Withrow.

Discusses the deoxidizing efficiency of zirconium alloys compared with other deoxidizers; the amount of slag retained in the steel after deoxidation; the qualities of castings, deoxidized with various solutions, such as machineability, ability to take a high polish, freedom from oxide or dirt and ease of cleaning in the foundry; and concludes in favor of zirconium as a deoxidizer. Describes various methods of comparing deoxidizing efficiencies.

Report of Committee A-6 on Magnetic Properties. Thomas Spooner, Chairman.

Progress report of committee activities presenting extensive revision of standard method of test for magnetic properties of iron and steel for publication as tentative.

A Correlation of Some Mechanical and Magnetic Properties of 1.21-per-cent Carbon Tool Steel. J. V. Emmons and R. L. Sanford.

Presents results of an investigation on the magnetic properties of hardened steels. The mechanical properties considered are hardness, strength, plasticity, toughness and microstructures. The magnetic properties are maximum induction, residual induction and a value indicative of the coercive force. The paper shows possible relationships between the various physical properties and presents a better understanding of these fundamental properties.

Specifications for the Gage of Sheet Metals in Terms of Quality Control. R. L. Peek, Jr.

Outlines a method of specifying the gage of sheet metals which permits the estimation of the probability that any portion of a sheet lies within any given limits with respect to the nominal gage. Discusses the inspection methods adapted to such a specification, and the information afforded engineers dealing with material so specified. Includes a brief explanation of the use of methods of quality control in the manufacture of material meeting a specification of this type.

2-4 P. M. { RECREATION
 COMMITTEE MEETINGS

Provisional Program for Thirty-fifth Annual Meeting (Continued)

Sixth Session 9.30 A. M. Wednesday, June 22

Held Simultaneously with Fifth Session

Rubber, Paints, Petroleum Products, and Electrical Insulating Materials

Report of Committee D-11 on Rubber Products. C. R. Boggs, Acting Chairman.

Presents new tentative performance specifications for rubber insulated wire and cable. Submits new tentative specifications for friction tape for general use for electrical purposes to supersede the present standard specifications; also revisions of tentative specifications for rubber insulating tape. Reports progress on extensive program of committee work including mechanical rubber hose; on life tests; on rubber products for absorbing vibration; and on dynamic fatigue tests.

Report of Committee D-9 on Electrical Insulating Materials. H. L. Curtis, Chairman.

Presents new tentative methods of test for laminated tubes used in electrical insulation; method of grading natural mica, and methods of testing electrical insulating materials at frequencies of 1000 cycles. Presents tentative revision of standard methods of testing molded insulating materials; also revisions of tentative methods of testing untreated insulating paper; laminated sheet materials; and test for resistivity of insulating materials. Summarizes progress on extensive program of subcommittee activities.

Application of Control Analysis to the Quality of Varnished Cambric Tape. M. F. Skinker.

Presents control analysis of the products of four manufacturers, for which control charts are plotted for the average dielectric strength and for the standard deviation of successive samples. These control charts show that in general the manufacturers were not controlling the quality of their product. The tests required by the present specifications on varnished cambric tape were investigated for control. Measurements from the same rolls were analyzed before and after these tests and it was found that the control remained about the same indicating that the tests were probably controlled tests.

Report of Committee D-2 on Petroleum Products and Lubricants. T. A. Boyd, Chairman.

Announces publication as tentative of viscosity-temperature chart for liquid petroleum products. Presents revised tentative methods of test for color of petrolatum and for color of lubricating oil by means of A.S.T.M. Union colorimeter, and revisions of three standard methods and two tentative methods. Presents report of technical committee on gasoline including methods for determination of gum content and a proposed method for determination of knock characteristics of motor fuels published as information. Presents report on cloud and pour test.

Paper Appended: "A Microscopic Study of Certain Oils Which Show the Phenomenon of High and Low Pour Point" by R. W. Moore and L. C. Beard, Jr.

Report of Committee D-1 on Preservative Coatings for Structural Materials. Allen Rogers, Chairman.

Presents new tentative specifications for ethylene glycol mono butyl ether; for ethylene glycol mono ethyl ether; two specifications for acetate ester of ethylene glycol mono ethyl ether (90 to 91 per cent grade) and (95 to 96 per cent grade); shellac varnish; and method of test for comparative hiding power of paints. Presents tentative revisions of a standard specification and nine methods of analysis of paints and pigments. Recommends revisions in methods of testing shellac; methods of testing nitrocellulose clear lacquers and lacquer enamels; and specifications for glazier's putty. Includes report of cooperative work on hiding power of wet paints.

A Rapid Method of Determining the Specific Gravity of Pigments and Powders. E. J. Dunn, Jr.

Describes a method of determining specific gravity in which the pigment is wet by grinding in a good dispersing medium instead of being wet by the use of a vacuum. The pigments are ground in a small volume of distilled water using dry powdered gum arabic as a dispersing agent. The suspension is transferred to a specific gravity flask with an especially widened top and narrow, graduated neck. The flask is filled to the 100 cc. mark with distilled water brought to bath temperature and weighed. From this value and the calibration data the specific gravity may be computed.

Baking Japans. A. H. Sabin.

Discusses varnish enamels for protective coatings on metal. Describes the method of applying and baking coatings on large objects. Presents examples in which varnish enamels have been used in long service on steel water pipe lines.

**2-4 P. M. { RECREATION
COMMITTEE MEETINGS**

Seventh Session 4 P. M. Wednesday, June 22

Edgar Marburg Lecture

Seventh Edgar Marburg Lecture: "Fundamentals in the Problem of Resistance to Deterioration," by Prof. Hugh Stott Taylor (see page 3).

Discusses the fundamental factors in the general problem of deterioration of materials which have been revealed by recent studies of the mechanism of certain typical chemical reactions. The function of minute quantities of substances in accelerating and retarding the rate of chemical processes can now be exhibited and applied to the problems of deterioration and, hence, to the preservation of materials. Light, air and moisture are factors which influence the reactions in question and their significance can be assessed. The principles involved are applicable to a wide variety of products including paints and varnishes, fabrics, rubber, oils and fats, artificial leather, and pharmaceuticals.

7. P. M. Wednesday, June 22

A.S.T.M. Dinner

Presidential Address

Annual Address by the President. F. O. Clements.

Charles B. Dudley Medal Award.

The Sixth Award of the Charles B. Dudley Medal will be made to the author of the paper, presented at the 1931 Annual Meeting, of outstanding merit constituting an original contribution on research in engineering materials. The committee has made the selection but the announcement of the winner will not be made until the dinner, when the medal will be presented.

Introduction of New Officers.

The terms of the new officers, under the provision of the By-laws begin at the close of the annual meeting.

To be followed by

Informal Dance and Smoker

Eighth Session 9.30 A. M. Thursday, June 23

Held Simultaneously with Ninth Session

Wrought Iron, Cast Iron, Effect of Temperature on Metals

Report of Committee A-2 on Wrought Iron. H. W. Faus, Chairman.

Progress report of committee activities announcing preparation and distribution of questionnaire on what constitutes quality in wrought iron. Reports study underway on effect of temperature on wrought iron.

Report of Committee A-7 on Malleable Castings. W. P. Putnam, Chairman.

Reports on studies of embrittlement of malleable iron in the galvanizing process and on corrosion-resisting properties of malleable-iron castings. Presents new tentative specifications for malleable iron castings including new grade of high-strength casting.

Provisional Program for Thirty-fifth Annual Meeting (Continued)

Report of Committee A-3 on Cast Iron. Hyman Bornstein, Chairman.

Reports status of impact testing investigation and discusses work on classifications of cast iron. Announces preparation and distribution of questionnaire on automotive castings. Presents new tentative specifications for cast-iron culvert pipe.

Mechanism of Deformations in Gray Iron. J. W. Bolton.

Discusses the phenomena of permanent set in gray iron.

Informal Report of Sectional Committee on Specifications for Cast-Iron Pipe and Special Castings. T. H. Wiggin, Chairman.

Report of Joint Research Committee of A.S.M.E. and A.S.T.M. on Effect of Temperature on the Properties of Metals. H. J. French, Chairman.

Covers committee activities for the year. Includes reports giving a correlation of high-temperature creep and fatigue characteristics on carbon boiler steel; the result of impact and magnetic tests and metallographic examination of 18-8 austenitic chromium-nickel steels under different conditions of treatment; and an appraisal of present creep testing methods based on data from cooperating laboratories on chromium-molybdenum steel.

An Extensometer for Tension Tests at High Temperatures. P. G. McVetty.

Discusses the requirements of an extensometer for tension tests at high temperatures covering the advantages and disadvantages of existing apparatus. Describes an instrument in which various requirements are incorporated, including the following: adaptability to various lengths and diameters of specimens, adaptability to various methods of measurement, simplicity of design, low cost of replacement of worn or damaged parts, calibration with standard Martens extensometer, samples of data from short-time and long-time tension tests, and summary of advantages and conclusions.

Temperature Effects in Elastic and Plastic Deformation. M. F. Sayre.

Discusses certain temperature effects in connection with the use of elastic-member calibration devices taking into account the effect of thermal factors upon ordinary extensometer measurements and upon measurements made to determine the amount of creep which is now becoming an important matter. These thermal effects are of two types: (1) below the elastic limit, the decrease in temperature with increasing tensile stress and increase in temperature with increasing compressive stress; (2) above the elastic limit there is added to this effect the increase in temperature resulting from the work of plastic deformation.

Ninth Session 9.30 A. M. Thursday, June 23

Held Simultaneously with Eighth Session

Timber, Coal, Paving and Waterproofing Materials

Report of Committee D-7 on Timber. Hermann von Schrenk, Chairman.

Presents new tentative standard volume correction table and specific gravity correction table for creosote, creosote-coal-tar solution, and coal tar. Reports progress on determination of moisture in timber and includes informational report on piling specifications.

Report of Committee C-5 on Fire Tests of Materials and Construction. R. P. Miller, Chairman.

Announces organization of new subcommittees on fire tests of acoustical and similar finishes; on fire tests of scaffolding; and on nomenclature and definitions. Reports review of tentative specifications for fire tests of building construction and materials. Reports progress on studies of fire tests of lumber and on doors for use on interior wall openings.

Report of Committee D-5 on Coal and Coke. A. C. Fieldner, Chairman.

Presents new tentative methods of sampling coke for analysis and recommends tentative revision of standard methods of laboratory sampling and analysis of coal and coke to include a ball-mill method as an alternate laboratory method of sampling coal. Announces organization of new subcommittee on coal friability. Reports progress in work on agglutinating value; sampling tolerances; pulverizing characteristics of coal and foundry coke specifications.

Report of Sectional Committee on Classification of Coals. A. C. Fieldner, Chairman.

Summarizes results of experimental work and discusses activities to collect and correlate facts and data on the composition, properties and uses of North American coals. Reports progress of work on marketing practice; use classification; scientific classification; methods of analysis, origin and composition of coal; and on tentative classification of coals.

Report of Committee D-8 on Bituminous Waterproofing and Roofing Materials. C. N. Forrest, Acting Chairman.

Reports results of further investigations by subcommittee on accelerated weathering tests and discusses report on refined ductility tests for roofing materials presented last year.

An Apparatus and Method for Measuring the Consistency of Roofing Putties and Fibrous Roof Coatings. G. W. Clarvoe.

Describes an apparatus and method of test developed for measuring the working consistency of roofing putties and fibrous roof coatings. Presents results showing the sensitivity of the apparatus, its reliability, its applicability for use with the materials in question, and its wide range of applications to the measurement of many miscellaneous materials. Discusses the need for and the desirability of consistency standardization of putties and roof coatings.

Report of Committee D-4 on Road and Paving Materials. P. J. Freeman, Chairman.

Presents new tentative methods of chemical analysis of calcium chloride. Recommends advancement to standard of definitions for bitumens, asphalt, flux, tars, and pitches; and presents revisions of tentative method of test for consistency of portland-cement concrete. Submits report of subcommittee on extraction of bituminous aggregates, including proposed methods of testing sheet asphalt paving mixtures.

The Volatile Combustible Matter of Coal-Tar Pitch. J. M. Weiss.

Describes the factors involved in the determination of volatile, combustible matter in coal-tar pitch by the usual platinum-crucible method used on coal. Discusses the effect of various periods and methods of preheating, and also the effect of adding inert non-volatile matter to the sample.

RECREATION

Thursday Afternoon

Golf and Tennis Tournaments

Tenth Session 8 P. M. Thursday, June 23

Corrosion and Fatigue of Metals

Report of Committee A-5 on Corrosion of Iron and Steel. J. H. Gibboney, Chairman.

Reports additional failures in total immersion tests and summarizes progress of exposure tests on metallic coatings and work on development of methods of testing metallic coatings. Recommends revisions of six standard specifications covering galvanized wire and wire products and recommends withdrawal of specifications for chain link fence fabric galvanized before weaving. Presents final report on embrittlement investigation with recommendations for revision of standard specifications for zinc (hot-galvanized) coatings on structural steel shapes, plates and bars and their products.

Embrittlement of Hot-Galvanized Structural Steel. Samuel Epstein.

Embrittlement in galvanized structural steel angles for transmission towers is discussed and methods of quantitative testing for such embrittlement about punched bolt holes are described. Data from over 4000 tests on 170 heats of bessemer, duplex and open-hearth steel are presented. Steels were tested in the as-rolled and as-galvanized conditions using punched and drilled holes. Recommendations are included for avoiding injurious embrittlement.

Report of Sectional Committee on Specifications for Zinc Coating of Iron and Steel. J. A. Capp, Chairman.

Progress report of activities of technical committees on hardware fastenings, sheets and sheet products, pipes and fittings, wire and wire products and methods of testing.

Provisional Program for Thirty-fifth Annual Meeting

(Continued)

Controlled Data from an Immersion Test. R. F. Passano.

A study of data from an immersion test in Miami Valley well water by modern statistical methods indicated when the necessary and sufficient conditions have been established. Under these controlled conditions, an investigation of the relationship between time and loss of weight on iron is made.

Some Factors Affecting the Preece Test for Zinc Coatings. H. H. Walkup and E. C. Groesbeck.

Discusses the investigation of the variations which may be found in the copper sulfate solution employed for the Preece test and of the effect of these variations on the end-point, that is, the deposition of adherent copper on the varied iron or steel, when testing specimens of various galvanized iron and steel wire products; and the search for a remedy whereby these variations may be eliminated and a dependable end-point assured under all normal conditions of testing. Wire specimens of hot-dip galvanized, electrogalvanized, and galvanized steel, commercially pure zinc and low-carbon steel are used in this study.

Effect of Zinc Coatings on the Endurance Properties of Steel. W. H. Swanger and R. D. France.

Presents results of a series of fatigue tests made on three ferrous metals: open-hearth iron containing 0.02 per cent carbon, and two plain carbon steels containing 0.45 per cent and 0.72 per cent carbon, respectively. Endurance limits are determined on each of these materials by means of the R. R. Moore rotating-beam machine and the Haigh axial-loading machine. The rotating-beam tests are made on uncoated specimens, on specimens pickled as for galvanizing, on specimens galvanized by the hot-dip process, and on specimens with an electroplated zinc coating. The axial-loading tests were made on uncoated and on hot-dip galvanized specimens only.

Report of Research Committee on Fatigue of Metals. H. F. Moore, Chairman.

Summarizes present-day knowledge of corrosion fatigue and significance of fatigue test.

Fatigue of Shafts Having Keyways. R. E. Peterson.

Describes the two types of straight keyways in common use, that is, the sled-runner and profiled types, and presents results of fatigue tests made on specimens 1 in. in diameter and having 1-in. keyways. These tests show that the sled-runner keyway is 30 per cent stronger in fatigue than the profiled keyway for chromium-nickel steel. Tests on medium-carbon steel are also included. Stress concentration factors are given and some theoretical aspects are discussed.

Fatigue Failure Under Repeated Compression. H. R. Thomas and J. G. Lowther.

Presents results of tests made on flexure specimens of structural steel and of rail steel, T-shaped, and so tested that the stem of the T is subjected to repetitions of compressive stress, while the maximum tensile stress in the flange of the T is distinctly lower than the compressive stress in the extreme fiber of the stem of the T. The specimens are tested in a repeated-axial-stress machine fitted with an attachment for flexure tests under one-directional bending moment, the bending moment varying during a cycle from a very small value to a maximum, with no reversal of bending moment.

Eleventh Session 9.30 A. M. Friday, June 24

Held Simultaneously with Twelfth Session

Cement, Lime, Gypsum, Ceramics

Report of Committee C-1 on Cement. P. H. Bates, Chairman.

Recommends immediate revision of standard methods of testing cement and the manual of cement testing and recommends withdrawal of specifications and tests for compressive strength of portland-cement mortars. Announces publication as tentative of specifications for masonry cement. Includes reports on cement reference laboratory and on effect of temperatures of cement at time of use including digest of investigations on this subject with bibliography.

Measurement of Particle Size with an Accurate Air Analyzer: I. The Fineness and Particle Size Distribution of Portland Cement. P. S. Roller.

Describes an air analyzer which has been improved to increase the rate of separation and convenience of manipulation. Presents a particle-size analysis on three representative portland cements in terms of the percentage by weight contained in the fractions 0-5, 5-10, 10-20, 20-40, 40-80 and 80 microns. For microscopic investigation of the 0-5 micron fraction, or of similar finely divided powder, a method is described of rapidly dispersing the powder on the microscopic slide by the use of a No. 24-gage platinum wire and a drop of saponin solution.

Report of Committee C-11 on Gypsum. J. W. Ginder, Chairman.

Presents extensive revision of standard methods of testing gypsum and gypsum products; also tentative revisions of specifications for gypsum partition tile or block; gypsum plasters and gypsum molding and pottery plasters. Reports on work of subcommittees on gypsum for various uses, gypsum plasters and on methods of testing.

Report of Committee C-7 on Lime. H. C. Berry, Chairman.

Reports progress on work of various phases of lime including structural lime, methods of soundness and plasticity of lime and lime products and of decision to initiate study of hydraulic lime.

Report of Committee C-12 on Mortars for Unit Masonry. R. E. Davis, Chairman.

Reports organization of committee and plans for work during the coming year.

Report of Committee C-4 on Clay Pipe. G. T. Hammond, Chairman.

Reports reorganization of committee and presents extensive revision of standard specifications for clay sewer pipe in form of separate tentative specifications.

Report of Committee C-6 on Drain Tile. Anson Marston, Chairman.

Presents abstracts of research investigations on the durability of drain tile under exposure to various soil conditions and also studies of the durability of different concretes in alkali soils and waters.

Report of Committee C-8 on Refractories. G. A. Bole, Chairman.

Recommends adoption of revisions of test for porosity and volume changes in refractory materials; test for softening point of fire-clay brick and test for resistance of fire-clay brick to thermal spalling action. Presents as information proposed method for determination of particle size of ground refractory materials. Includes progress reports on research activities including proposed standard samples of refractory materials, study of furnaces used to perform the load test, measurement of warpage in refractories, investigation of the P. C. E. test, and measuring heat transmission of refractories.

Twelfth Session 9.30 A. M. Friday, June 24

Held Simultaneously with Eleventh Session

Non-Ferrous Metals

Report of Committee B-1 on Copper Wire. J. A. Capp, Chairman.

Report of Committee B-3 on Corrosion of Non-Ferrous Metals and Alloys. T. S. Fuller, Chairman.

Comprehensive report describing materials and testing procedure being used in exposure tests including physical properties and photomicrographs. Describes test locations and presents critical review of corrosion testing.

Report of Committee D-14 on Screen Wire Cloth. R. W. Woodward, Chairman.

Progress report of atmospheric exposure and laboratory tests of non-ferrous screen-wire cloth.

Report of Committee B-4 on Electrical-Heating, Electrical-Resistance and Electric-Furnace Alloys. Dean Harvey, Chairman.

Announces organization of new subcommittee on thermostatic metals. Reports progress on development of method for determining the temperate coefficient of sheet resistance material and on development of bend test to determine the elastic properties of alloys at high temperatures. Discusses investigation of wrought and cast alloys for use at high temperatures, including test for thermal conductivity and test for thermal coefficient of linear expansion and development of test specimen for determining warpage.

Effect of Cold Working on the Izod Notched Impact Value of Monel Metal. N. B. Pilling.

Presents data on the extent to which impact strength is dependent upon the cold working of monel metal. Shows that the two are closely related, the Izod value at first rising considerably and later falling. Furthermore, the data show that in the case of cold-rolled strip the impact strength differs to a large extent in the more highly-worked material, depending upon the direction the notch takes with respect to the rolling axes.

Provisional Program for Thirty-fifth Annual Meeting (Continued)

Influence of Recrystallization Temperature and Grain Size on the Creep Characteristics of Non-Ferrous Alloys. C. L. Clark and A. E. White.

Presents results of long-time creep tests conducted on non-ferrous alloys of the copper-zinc, copper-zinc-tin, and nickel-copper series, at temperatures both above and below their lowest recrystallization temperature. Shows that grain size and recrystallization temperature are so related that at temperatures below the lowest recrystallization temperature, fine-grained materials offer the greater creep resistance, while at temperatures above, the coarse-grained material is superior.

Report of Committee B-5 on Copper and Copper Alloys, Cast and Wrought. C. H. Mathewson, Chairman.

Presents new tentative specifications for copper water tube. Proposes revisions of standard specifications for copper pipe and boiler tubes; for brass pipe and plates; for copper bars and for sheet high brass. Proposes revisions of tentative specifications for copper-base alloys in ingot form; for the alloy: copper 80, tin 10, lead 10; and for seamless copper tubing. Recommends withdrawal of specifications for bronze bearing metal in ingot form.

Factors Affecting the Physical Properties of Cast Red Brass (85 Cu, 5 Zn, 5 Sn, 5 Pb). H. B. Gardner and C. M. Saeger, Jr.

Discusses results obtained on cast brass of the type 85-5-5-5 made from virgin metals and from remelted metals. Describes the method of sampling, that is, the form and size of the test specimens, and presents information on other topics, such as shrinkage and "running properties" of the metal.

Thirteenth Session 2 P. M. Friday, June 24

Held Simultaneously with Fourteenth Session

Non-Ferrous Metals, Metallography

(Continued from Twelfth Session)

Report of Committee B-2 on Non-Ferrous Metals and Alloys. William Campbell, Chairman.

Presents revision of tentative specifications for fire-refined copper. Reports initiation of work on specifications for type metals and specifications for tin.

Report of Sectional Committee on Zinc and Zinc Ores. W. H. Bassett, Chairman.

Recommends additional grade in specifications for spelter (slab zinc) to cover electrolytic metal favored for certain die castings and other uses.

Mechanical Properties of White-Metal Bearing Alloys at Different Temperatures. H. K. Herschman and J. L. Basil.

Presents results of tests made on a series of lead- and tin-base bearing alloys and an alloy of cadmium-zinc for the determination of their mechanical properties at both room and elevated temperatures. These tests include the determination of wear resistance, resistance to pounding, Brinell hardness, stress-strain relations in compression, and impact resistance by the Izod notched-bar method. The wear specimens, tested on the Amelcer wear-testing machine at room temperatures only, are wetted by a continuous flow of kerosine for the purpose of preventing oxidation and overheating and for the maintenance of constant temperature.

Report of Committee B-6 on Die-Cast Metals and Alloys. H. A. Anderson, Chairman.

Reports progress of committee activities and presents charts and tables of data on physical properties of test specimens of aluminum and zinc alloy die castings after exposure in laboratory and field tests. Includes data on finishing characteristics of die castings.

Report of Committee B-7 on Light Metals and Alloys, Cast and Wrought. J. B. Johnson, Chairman.

Presents tentative specifications for aluminum alloy wire, rods, bars; for magnesium-base alloy sheet; and for magnesium-base alloy wrought shapes (other than sheet). Announces organization of three new subcommittees on methods of testing light alloys, on service characteristics of light alloys and methods of protection against corrosion, and on test bar design for light metals.

Report of Committee E-4 on Metallography. C. H. Davis, Chairman.

Presents recommendations on the selection of proper combinations of lenses for various magnifications to be added to the recommended practice for photography as applied to metallography. Presents progress report of special committee on grain characteristics of steel. Announces revision in preparation of standard methods of metallographic testing of iron and steel and of non-ferrous metals and alloys.

Method of Preparation of Lead and Lead Alloy Cable Sheath for Microscopic Examination. W. H. Bassett, Jr., and C. J. Snyder.

Discusses methods of preparing, polishing, etching, examining and photographing lead and lead alloy cable sheath. Presents tabular data showing etching reagents used by various authorities.

Miscellaneous Business.

Fourteenth Session 2 P. M. Friday, June 24

Held Simultaneously with Thirteenth Session

Concrete, Building Stones

Report of Committee C-9 on Concrete and Concrete Aggregates. Cloyd M. Chapman, Chairman.

Progress report on many important problems in concrete field. Submits revisions of standard methods for organic impurities and sieve analysis of concrete aggregates and methods of making and testing compression test specimens. Includes revisions of tentative methods for soundness of aggregates and test for structural strength of fine aggregates. Submits as information suggested method for conducting freezing and thawing tests. Announces work under way on ready-mixed concrete, light-weight aggregates and test for absorption of aggregates.

Informal Report of Society's Representatives on Joint Committee on Standard Specifications for Concrete and Reinforced Concrete. P. H. Bates, Chairman.

Tests on Consistency and Strength of Concrete Having Constant Water Content. Inge Lyse.

Presents data on workability and strength of concrete which show that the consistency of the concrete remains constant regardless of richness of mix so long as the type and gradation of the aggregates and the water content per unit of fresh concrete remain constant. One series of tests includes five different cements and shows that the type of cement had a slight effect upon the consistency of the concrete, while the richness of the mix for each cement had practically no effect. Another series of tests includes nine different types of concrete aggregates and shows that the type of aggregate had a great effect upon the water requirement for a given consistency of concrete.

Volume Changes of an Early-Strength Concrete. E. R. Dawley.

Discusses the effect on the volume change of concrete of each of the following variables: Kind of cement, ordinary portland cement compared with early-strength portland cement; character of coarse aggregate, sandstone compared with limestone; richness of mix; consistency of concrete; change of temperature using dry and wet specimens; and change in moisture content. Presents data on results obtained on volume change by varying the temperature and the moisture content.

Relative Merits of Various Materials Used in Capping Concrete Specimens. M. V. Nardiello.

Discusses the relative merit of various materials in current use for capping concrete specimens. Presents a comparison of the compressive strength results on a series of concrete specimens made from the same quality of material and molded and cured under the same conditions. The materials used for capping specimens are: plaster of Paris, plaster of Paris and portland cement, portland cement, celotex, sulfur and fire clay, and leadite.

Report of Committee D-18 on Natural Building Stones. F. Y. Joannes, Chairman.

Miscellaneous Business.

AMERICAN SOCIETY FOR TESTING MATERIALS

BULLETIN

Issued Bi-Monthly

Engineers' Club Building, 1315 Spruce St., Philadelphia, Pa.

President

F. O. CLEMENTS

Vice-Presidents

CLOYD M. CHAPMAN

T. R. LAWSON

Secretary-Treasurer

C. L. WARWICK

Members of Executive Committee

ARTHUR W. CARPENTER

G. C. D. LENTH

K. B. COOK

O. L. MOORE

F. H. JACKSON

H. H. QUIMBY

ZAT JEFFRIES

G. A. REINHARDT

J. B. JOHNSON

H. N. VAN DEUSEN

Past-Presidents

G. W. THOMPSON

T. D. LYNCH

K. G. MACKENZIE

Assistant Treasurer

J. K. RITTENHOUSE

Assistant Secretary

R. E. HESS

Number 56

April 30, 1932

Another Annual Meeting Rolls Around

ONCE again the big event of our year looms on the immediate horizon—the Thirty-fifth Annual Meeting. Since the last annual meeting, very successful local and regional meetings have been held in New York, Cleveland, Detroit and Chicago—and now we are deep in the details of another annual one. Plans under way for a year or more are coming to fruition; reports of committee work are being edited for publication; investigators in widely diversified fields are preparing papers giving the results of their search for knowledge of materials; arrangements are being perfected for symposiums, round table discussions, committee meetings, Marburg Lecture, Dudley Medal Award, Annual Dinner—all the things that make up such a meeting are being developed for the ultimate success of this annual gathering of our members and their guests. The accompanying program and announcements in *this* issue tell the story.

Have you ever stopped to think what a big thing this annual meeting of ours really is? We don't mean merely physical bigness; we are thinking more particularly of what it means for the Society as an organization, and for the members individually. For the Society, it is the articulate expression of all that we stand for—the means whereby we function as a body, accomplishing things that mean much to industry and technology. For the members, it fulfills the fundamental justification for the existence of any technical society—opportunity for association, providing the medium through which information and ideas are exchanged, fellowship and professional spirit fostered, and the efforts of all united towards the advancement of the testing and specifying of materials. The annual meeting is the *one* thing in the Society year you ought not to miss if you can possibly help it.

We know conditions are none too favorable this year. But make unusual efforts to attend the meeting; participate in committee work; contribute to the discussions; meet fellow members and exchange thoughts and ideas with them. Your membership will mean just that much more to you.

Nominations for Officers

The following nominations for officers are announced:

For President:

Cloyd M. Chapman, Consulting Engineer, New York City.

For Vice-President:

W. H. Bassett, Metallurgical Manager, The American Brass Co., Waterbury, Conn.

For Members of Executive Committee:

J. O. Leech, Assistant Metallurgical Engineer, Carnegie Steel Co., Pittsburgh, Pa.

H. A. Gardner, Chemical Engineer, Institute of Paint and Varnish Research, Washington, D. C.

J. C. Ramage, Engineer of Tests, Southern Railway Co., Alexandria, Va.

J. T. MacKenzie, Chief Chemist, American Cast Iron Pipe Co., Birmingham, Ala.

H. S. Vassar, Laboratory Engineer, Public Service Electric and Gas Co., Irvington, N. J.

The nominations were made by the Nominating Committee, the personnel of which was announced in the Circular to Members No. 215. Each of the above nominees has indicated in writing his acceptance of his nomination. The By-laws provide that "further nominations, signed by at least 25 members may be submitted to the Secretary-Treasurer in writing by May 20, and a nomination so made, if accepted by the member nominated, shall be placed on the official ballot" which "shall be issued to the members between May 20 and June 1."

Proposed Amendments of the By-laws

At the first session of the annual meeting on Tuesday morning, June 21, in conjunction with the presentation of its annual report, the Executive Committee will propose to the Society the following amendments of the By-laws:

Amend Article I, Section 4 of the By-laws to read:

"A Student Member shall be an *Undergraduate* or Graduate Student in a technical school of recognized standing," . . .

This article now reads:

"A Student Member shall be a Junior, Senior or Graduate Student in a technical school of recognized standing," . . .

A provision for entrance fees for Sustaining Members was inadvertently omitted from the amendment to Article VII, Section 2 of the By-laws last year, in setting up the class of Sustaining Membership, and it is proposed to revise this by the insertion of the italicized words:

"The entrance fees payable on admission to the Society shall be \$10 for *Sustaining Members* and Members, and \$5 for Junior Members."

Revision in Price Scale for Separate Standards

At the recent meeting of the Executive Committee a revision was authorized in the scale of prices charged for quantity orders of separate standards and tentative standards. This price scale, as given here, will result in a considerable saving to those who desire to obtain copies of any single standard in quantity or single copies of individual standards, the order aggregating a quantity within the scale.

Single copies and up to 24	25 cents per copy
25 to 99 copies	20 cents per copy
100 to 249 copies	15 cents per copy
250 and above	special quotations

Should any company or individual desire to make use of quantities of certain standards with which their products comply, the Society will cooperate in furnishing these and on quantities of more than 250, as noted in the price scale—special prices will be quoted.

Index to Proceedings, 1926-1930

The Society adopted in 1927 a policy of issuing an *Index to Proceedings*, covering a five-year period. Two Indexes had been issued previous to 1927 covering the *Proceedings* for the years 1898-1912 and 1913-1920, respectively. The third Index issued in 1927 covered the *Proceedings* for the years 1921-1925. The fourth Index has now been prepared and covers *Proceedings* for the years 1926-1930. It comprises a volume of 251 pages. This is furnished to members at net cost.

This publication contains a comprehensive subject index and, as well, an author index which lists in the case of each name appearing therein, all papers or discussions attributed to that author, or any committee reports bearing his signature. The value of the Index to members is obvious for it affords a convenient means of locating articles or reports in which they may be interested, which have appeared over a five-year period. It likewise increases the value of the *Proceedings* themselves since it makes more readily accessible the material contained therein.

The price of the fourth *Index to Proceedings*, available in two bindings, is as follows:

	Cloth	Half-Leather
To members (at cost).....	\$1.75	\$2.75
To non-members.....	2.50	3.50

Members and others who desire to secure copies may now obtain them promptly. Orders should be sent to the Society, 1315 Spruce St., Philadelphia.

Entrance Fee Payment and Annual Dues

New members, under a plan approved by the Society officers, may spread the payment of their entrance fee over two years, one half payable when the application is filed and the balance on January 1, 1933. Likewise, half of the payment for annual dues may accompany the application, the balance to be payable on September 1, 1932.

These decisions have been reached with the principal object of permitting those who urgently desire to become affiliated with the Society to do so, despite income reductions which they may have suffered. This fact is especially called to the attention of members, with a request that they pass the information along to prospective members.

Interesting Local Meeting Held in Chicago

A very interesting meeting under the auspices of the Chicago District Committee was held in Chicago on April 11. The meeting was a joint one in which A.S.T.M. members in the Chicago district and members of the Western Society of Engineers participated. An attendance of more than 150 greeted President Frank Chase of the W. S. E. when he introduced H. G. Farmer, Chairman of the Chicago District Committee.

Mr. Farmer spoke on the purpose and activities of the A.S.T.M. and then introduced Prof. H. F. Moore, Past-President of the Society, who delivered an address on the "Relation of Tested Material to Safe and Economic Engineering." This is to appear in a forthcoming issue of the *Journal of the Western Society of Engineers*.

Members—Use This Bulletin!

All issues of the A.S.T.M. BULLETIN can be put to profitable use, particularly the present one, since it contains the program of the approaching annual meeting. Why not make use of the enclosed card and obtain additional copies of the BULLETIN to pass along to a few of your friends and associates, who would be interested in some of the features outlined in the Provisional Program? If you would prefer that the BULLETIN be sent direct with an invitation to attend the annual meeting, jot down the names and addresses on the card and mail it. By so doing you will render a distinct service to the Society.

We need new members—every organization to prosper and progress needs new blood. Fresh stimulus is given—new viewpoints are obtained. We are enrolling companies and individuals regularly—see page 15—but the Society should reach hundreds of others.

The letter of March 26, sent you with the March BULLETIN, commented—"Never in all our history has there been a time when the technical man in industry has had greater need for precise knowledge of materials and the application of standard tests and specifications—just what the A.S.T.M. offers him." If we can reach him, if you will give us a lead, we can begin to convey to him some idea of what the Society is doing and why membership is of value.

The standing committees are striving to win the cup that has been offered to the group that enrolls the most new members. Several members are in line for the individual prize—one year's dues. Everyone can help in some way. A suggestion *here* (with an April BULLETIN) and a cordial invitation to attend the annual meeting, *there* (with an April BULLETIN) may do more than you think. Why not try it?

Masonry Cement Specifications Approved as Tentative Standard

Approval was recently given by Committee E-10 on Standards to the publication of the Specifications and Tests for Masonry Cement (C 91 - 32 T) as a tentative standard. The specifications were submitted for consideration by Committee C-1 on Cement. It is thought that the publication of this tentative standard will accelerate interest in improving the methods of testing masonry cement. The need for standard specifications has been evident for some time due to the many types of cement on the market.

A copy of this tentative standard may be obtained on request by using the coupon below.

American Society for Testing Materials
1315 Spruce Street
Philadelphia, Pa.

Gentlemen:

Kindly send me a copy of the Tentative Specifications and Tests for Masonry Cement (C 91 - 32 T).

NAME.....

ADDRESS.....

Symposium on Rubber Available in June

The twelve papers presented in the Symposium on Rubber, held in two technical sessions at the Cleveland Regional Meeting in March, are being assembled and together with the discussion will be printed so as to have copies of the book available in June. This book will be bound in cloth which conforms closely in texture and color to the binding of the *Proceedings*.

The Symposium itself has been commended by engineers in many branches of industry. It is believed that the book will be of real service to those industries in which rubber and its products are now used and in which projected uses are being developed.

A combined prospectus and order blank accompanies this issue of the BULLETIN. The book is specially priced to members at \$1.25.

Standard Engineering Symbols Approved

Symbols for use in the fields of mechanics, structural engineering and materials testing have been approved by the American Standards Association. The list was prepared by a special committee, organized in 1926, on which the Society was represented by the Assistant Secretary. Anyone who has studied any branch of engineering can fully appreciate this work. Very little thought has been given previously to a choice of symbols which was consistent and logical. A symbol used in one subject might have a very different meaning in another, even though the same property or unit, etc., which the symbol typified in the first was used in both. The symbols should be of real value not only to students, but to teachers in the fields to which they apply. Authors and book publishers should welcome the results of the committee's work, since the use of standard symbols will be of much help in clarifying diagrams, equations, and computations in publications. Copies of the standard can be secured from the A.S.A. office, 29 W. Thirty-ninth Street, New York City.

Spring Meeting of Committee C-1 on Cement

A particularly well attended meeting of Committee C-1 on Cement was held at the U. S. Bureau of Standards in Washington, D. C., on March 1. The committee gave careful consideration to the various proposed modifications in the Standard Methods of Testing Cement (C 77-30), and in the Manual of Cement Testing, the proposed revisions being largely intended to express more definitely some of the specification requirements, to somewhat liberalize certain tolerances for apparatus and to care for some of the questions and suggestions which have come to attention during recent months. Certain of these suggested revisions are now being submitted to letter ballot of the committee.

The section which is studying the effect of temperature of cement at time of use has prepared an interesting report which it is planned to include in the 1932 *Proceedings* as an appendix to the annual report of the committee.

The Cement Reference Laboratory reported a very considerable increase recently in the volume of work incidental to the almost completed second tour of inspection of cement laboratories.

Committee D-13 Has Successful Meeting

Committee D-13 on Textile Materials held its regular spring meeting in Providence, March 10-11. In the opinions of several of the committee members it was one of the most successful ever held. The registered attendance was 84 and unusual interest was displayed throughout the meetings of the subcommittees and general sessions. During the two-day meeting, the following technical papers were presented:

Testing Knit Goods—G. B. Haven
Some Factors Influencing the Spinning Quality of Cotton—H. H. Willis
Investigation of Methods for Conditioning Rayon Fabrics for Wet Tensile Strength Test—Alexis Sommaripa

At the dinner, held as part of the meeting, C. H. Clark, Secretary of the U. S. Institute for Textile Research, discussed the history of the textile industry, and the place of research in its development. Thomas Hagan, Vice-President of Textile Development Co., discussed outstanding differences between American and European mills and R. R. Watrous, Secretary of the Providence Chamber of Commerce, spoke on Providence as a manufacturing center.

The 1931 cotton crop was discussed. It was generally agreed that the strength is lower than usual but the reason is at present unknown.

Tentative Specifications for Tolerances and Test Methods for Tubular Sleeving and Braids were submitted. Revisions of the following were proposed: Standard Specifications for Tolerances and Test Methods for Cotton Sewing Threads, and for Tire Cord, Woven and on Cones; Tentative Specifications for Tolerances and Test Methods for Rayon. Tentative Specifications and Tests for Cuban (Jute) Raw Sugar Bags were recommended for advancement to standard.

Important work is in progress by the committee groups. Projects include: study of known samples of cotton with respect to yarn properties; shrinkage test for cotton fabrics; specifications for holland cloth for tire manufacture; wet tensile test and fraying test for rayon fabrics; specifications for asbestos roving; revision of methods of identification and determination of textile fibers in mixed goods; tear and elongation tests; study of machines for burst test of knit goods; complete revision of definitions and nomenclature; determination of small quantities of copper and manganese in cotton and rayon fabrics; revision of cotton yarn standards.

Committee C-5 to Organize New Subcommittees

As an outcome of extended discussion at its well attended meeting in New York City on March 17, A.S.T.M. Committee C-5 on Fire Tests of Materials and Construction has decided to organize new subcommittees to prepare, for the consideration of the main committee, specifications for fire tests of acoustical and similar finishes, and of scaffolding.

Reports from the subcommittees of Committee C-5 indicated marked progress in the development of the fire test specifications that are under consideration. These are proposed tests for treated lumber, and tests for doors for use on interior wall openings. One of the subcommittees has been assigned to review the comments and criticisms that have been received relating to the present Tentative Specifications for Fire Tests of Building Construction and Materials (C 19-26 T). As soon as a digest of these criticisms is prepared, the specifications will be critically reviewed, and it is hoped that soon thereafter they may be proposed to the Society for adoption as standard.

Committee on Timber to Recommend Creosote Tables as Tentative Standard

Committee D-7 on Timber as a result of action taken at the committee's meeting in Chicago in March, will present certain creosote tables to the Society at the annual meeting in Atlantic City in June, with a recommendation that they be approved for publication as tentative.

In 1927 a joint committee was set up composed of representatives of Committee D-7 and representatives of the Committees on Wood Preservation and Preservatives of the American Railway Engineering Association and the American Wood Preservers' Association. The objective of this joint committee was to provide standard tables for correcting the volume of creosote when observed at various temperatures in and above the atmospheric range, and for correction of specific gravity in a similar temperature range. It was known that the correction factor commonly in use in the wood preserving industry was not accurate, nor was there any general agreement on the correction factor or method of using it.

The Bureau of Standards having published about that time, correction tables for petroleum in cooperation with the American petroleum industry, it was decided to approach them with the view of having them make the necessary density determinations leading to the preparation of tables for creosote. The creosote tables were published in 1928 and 1929.

Following this the same committee obtained the cooperation of the Bureau in preparing additional tables for mixtures of creosote and coal tar commonly used by the railroads, and for coal tar. The revised tables include corrections in parallel columns for three commodities, namely creosote, creosote coal tar solution and for coal tar.

There can be no doubt that the tables will be universally recognized and used throughout the wood preservation industry and the importance of this matter to the industry may be judged by the statement that the annual use of creosote exceeds 200,000,000 gallons. Temperature correction enters into every transaction concerning the sale of creosote and its daily use at the treating plants. The Bureau of Standards has obviously performed an important service to the wood preserving industry.

Society to Join Inter-Society Color Council

In view of the interest of several Society committees in the work of the Inter-Society Color Council, which was organized in 1931, the Society has taken out a membership in the Council. At the first annual meeting of the Council in December, its aims and purposes were stated as follows:

"The aims and purposes are to stimulate and coordinate the work being done by the various societies and associations leading to the standardization, description and specification of color, and to promote the practical application of these results to the color problems arising in science, art and industry."

The Society is represented on the Color Council by M. Rea Paul (representing Committee D-1 on Preservative Coatings for Structural Materials) with H. M. Hancock (representing Committee D-2 on Petroleum Products and Lubricants) and W. M. Scott (representing Committee D-13 on Textile Materials) as alternates. At the annual meeting of the Color Council, Mr. Paul was elected Secretary.

High Temperature Metals Committee Announces Research Program

Announcement is made by the A.S.M.E.-A.S.T.M. Joint Research Committee on Effect of Temperature on the Properties of Metals of the perfection of plans for sponsored researches during the year 1932 at the Engineering Experiment Station of the University of Illinois, Urbana, Ill., and the Battelle Memorial Institute, Columbus, Ohio. Contributions and pledges so far made cover only about half of the \$20,000 needed for the proposed three-year research program of the committee, but the funds already made available by the Engineering Foundation, the National Electric Light Association, the American Petroleum Institute, the National Research Council and a group of alloy castings manufacturers through the Corrosion Resistant Alloy Founders' Division of the Steel Founders' Society of America, Inc., have made it possible to initiate activities and to continue work throughout the present calendar year. In the meantime, it is the hope of the committee and its sponsors that additional funds may be made available.

The work at the University of Illinois, under Prof. H. F. Moore, will relate largely to the endurance properties of austenitic nickel-chromium steels at different temperatures. This will be coordinated with creep tests at the Battelle Memorial Institute, under Dr. H. W. Gillett, as well as with studies at various industrial laboratories relating to the structural stability of those steels and the changes in various properties with time at high temperatures. Consideration will be given to wrought and cast metals from the same melts and in the case of the 18-8 chromium-nickel steel, to the effects of carbon content and preliminary heat treatments on its chemical, mechanical and structural stability.

At ordinary atmospheric temperatures the limiting stresses for design purposes are the repeatedly applied stresses (resistance to fatigue). While only a limited amount of data are available, there is evidence to indicate that the limiting stresses for steels at 1000° F. are not the repeatedly applied stresses but the ability of the metal to sustain fixed loads (resistance to creep). Further information is needed to confirm these views and to better define in the case of the austenitic nickel-chromium steels the temperature ranges within which the repeatedly applied stresses and the ability to sustain fixed loads become the limiting stresses.

The researches relating to cast and wrought carbon steels already under way will be continued at the different cooperating laboratories and will supplement the sponsored researches now being initiated. The work to be done under the guidance of the committee will be sufficiently broad in scope to interest not only the consumer of steels but also the producer, both in the field of wrought and cast metals, and it is hoped that during 1932 the balance of the fund needed for completion of these researches may be secured.

Committee C-4 Reorganizes

At a meeting in New York City on February 5, the organization of Committee C-4 as the Committee on Clay Pipe, discussed in the January BULLETIN, was effected. At this meeting and a subsequent one on April 8, tentative revisions were proposed in the Standard Specifications for Clay Sewer Pipe (C 13 - 24), and it is probable they will be recommended to the Society for approval as a tentative standard at the approaching annual meeting.

Work of Committee on Water Analysis to Proceed

It has been decided to proceed with the work of the new Committee D-19 on Water Analysis, handling the work in its preliminary stages by correspondence. No meeting to effect formal organization is being called at the present time, since it is felt that satisfactory progress can be made without an immediate meeting. The committee is to accordingly continue under the temporary chairmanship of Mr. Max Hecht, who at the present time is in Florida convalescing from a severe illness. A temporary advisory committee has been authorized by the Executive Committee of the Society which will consider questions of personnel and other organization matters.

The scope of the committee has been defined as follows:

"The purpose of the committee is the study and preparation of methods of analysis of water; water being considered as an engineering material. In addition to standardization of methods, the purpose includes terminology and interpretation of results of tests."

A general classification of industrial waters has been sent to the present personnel of the committee. This diagram appeared in the December BULLETIN on page 7.

It is proposed by the chairman that the committee should first give consideration to the preparation of standard methods of analysis that would be of service in respect to corrosion tests. These tests will include the determination of carbon dioxide, dissolved oxygen and hydrogen ion concentration. Methods would include both referee tests and plant control tests. Contributions, including present procedures and unpublished data relating to these are solicited. They should be sent to the Society.

LaVerne W. Spring

1876-1932

In the passing of LaVerne W. Spring, on March 23, the Society has lost a member who contributed greatly to its work, especially in the field of metals. After his graduation from the University of Michigan in 1901, with an A.B. degree in chemistry, he served for a time as chemist with the Illinois Steel Co., later accepting a similar position with the Wolverine Portland Cement Co. He returned to the Illinois Steel Co. to undertake metallurgical work in the plate mill. Subsequently he became connected with the Crane Co., first as chemist, then in charge of the laboratories, and since 1914, he has been chief chemist and metallurgist. He was the author of the interesting book "Non-Technical Chats on Iron and Steel" and he wrote extensively for the technical press.

The paper on "'Long-Time' or 'Flow' Tests of Carbon Steels at Various Temperatures," which he and his associate, J. J. Kanter, prepared for the 1928 A.S.T.M. Annual Meeting, won for them the Dudley Medal awarded in 1929.

His wide technical knowledge was greatly relied upon in the several committees of which he was a member, and his excellent judgment and wide experience, particularly fitted him for this work. He was the representative of the Crane Co. on Committees A-1 on Steel, A-10 on Iron Chromium, Iron-Chromium-Nickel and Related Alloys and A-7 on Malleable Castings. He also was a member of Committees A-3 on Cast Iron (chairman of Subcommittee XVII on Gray Iron Castings) and B-5 on Copper and Copper Alloys, Cast and Wrought. He contributed much to the Joint High Temperature Committee. He joined the Society in 1924.

His many personal and professional friends will miss him greatly. His high standards, his industry, tolerance and honesty—these are influences which will long remain.

Grinding Symposium to be Held in Buffalo

Members of the Society are invited to participate in the National Process Meeting, under the auspices of The American Society of Mechanical Engineers, which is to be held at the Hotel Statler, Buffalo, June 6 and 7. A Grinding Symposium is to be the chief feature of the meeting.

Dr. Lincoln T. Work, Assistant Professor of Chemical Engineering, Columbia University is to present an important paper entitled "An Analysis of Crushing and Pulverizing Processes as Related to Industrial Operations." Doctor Work's paper will give consideration to the finished product desired, the grindability of the raw material, the nature and effect of each type of mill action, the use of separating devices, and the energy required.

Extensive discussion of Doctor Work's paper, by both manufacturers and users is planned. Those interested in contributing discussion may secure a copy of the final paper from the Process Industries Committee, A.S.M.E., 29 W. Thirty-ninth St., New York City.

Index to Standards as an Advertising Medium

The inclusion of advertising in the annual Index to A.S.T.M. Standards and Tentative Standards as in the past few years will again be followed in 1932. The demand for the 1930 Index was so great that the edition of 9000 was practically exhausted before the 1931 Index appeared. The demand for the 1931 Index has continued and the Society has had a great many more requests from diversified fields for this issue than for any previous one. There are several reasons for this increased demand, the chief one of course being the fact that Society standards are being used more widely, and the Index affords a very convenient means of ascertaining in which Society publication, standards and tentative standards appear, and, too, of determining whether the Society has a standard covering a specific material. This wider circulation gives added value to the advertising section. The scope of Index advertising follows:

1. Advertisements covering engineering materials and products;
2. Advertisements involving general scientific apparatus, testing machines and equipment;
3. Professional cards of consulting engineers, metallurgists, chemists, testing engineers, and testing laboratories.

Members and others who are interested in securing further information about Index advertising, including the rates, may do so by writing to the Secretary-Treasurer.

Necrology

We announce with regret the death of the following members:

J. HAMMOND SMITH, Professor of Civil Engineering, University of Pittsburgh, Pittsburgh, Pa. Professor Smith was the second oldest professor in point of service in the University, having served 34 years. He was an author and an inventor. He has been a member of the Society since 1911; was a member of Committee A-1 on Steel and chairman, Section on Effect of Speed of Testing, of Committee E-1 on Methods of Testing.

FRANCIS P. SMITH, member of firm, Dow and Smith, Paving and Chemical Engineers, New York City. He has been a member of the Society since 1907. He was a member of the following committees: D-4 on Road and Paving Materials, Committee D-8 on Bituminous Waterproofing and Roofing Materials, Committee E-1 on Methods of Testing. Mr. Smith had international experience as a road builder.

New Members to April 25, 1932

The following 76 members were elected from January 21 to April 25, 1932:

Company Members (10)

American Electro-Platers' Society, H. A. Gilbertson, Secretary-Treasurer, 434 S. Wabash Ave., Chicago, Ill.
Atlas Tack Corp., Palmer Scott, Purchasing Agent, Fairhaven, Mass.
Diaz & Nava, 6a. Frontera No. 124, Mexico City, D. F. Mexico.
Habitshaw Cable and Wire Corp., R. J. Long, Jr., Eng. Assistant, Point St., Yonkers, N. Y.
International Braid Co., J. R. Dennis, Treasurer, 47 Charles St., Providence, R. I.
Lavorazione Leghe Leggere S. A., Ubaldo Magnani, Mechanical Engr., Via Principe Umberto 18, Milan, Italy.
National Assn. Inst. of Dyeing and Cleaning, Inc., W. J. Stoddard, President, 713 W. Peachtree St., Atlanta, Ga.
Riehle Bros. Testing Machine Co., R. G. Clark, Sales Manager, 1424 N. 9th St., Philadelphia, Pa.
Tooth and Co., Ltd., R. D. Lees, Chief Chemist, Box 1615 B. B., G. O. O., Sydney, N. S. W., Australia.
Wayne Laboratories, The, J. J. Shank, Director, 17 E. Main St., Waynesboro, Pa.

Individual and Other Members (59)

Alaska Agricultural College and School of Mines, The, Civil Eng. Dept., R. W. Chase, Professor of Civil Eng., College, Alaska.
Allinson, J. J., General Manager, Refining Division, Lion Oil Refining Co., El Dorado, Ark.
American Water Works Assn., A. V. Ruggles, Assistant to Secretary, 29 W. 39th St., New York City.
Amis, Maurice B., Chief Chemist, Standard Oil Co. of Louisiana. For mail: 1765 Government St., Baton Rouge, La.
Arrowsmith, J. C., Metallurgist, The Pressed Steel Co. of Great Britain, Ltd., Cowley, Oxford, England.
Bartow, Edward, Professor and Head, Department of Chemistry and Chemical Eng., State University of Iowa, Iowa City, Iowa.
Beal, G. D., Assistant Director, Mellon Institute of Industrial Research, Pittsburgh, Pa.
Bird, Byron, City Engr., 1602 Second Ave., North, Fort Dodge, Iowa.
Britten, C. R., Plant Manager, Monroe Calculating Machine Co., 555 Mitchell St., Orange, N. J.
Buffalo, City of, Health Dept., E. J. Powers, City Chemist, 584 William St., Buffalo, N. Y.
Carlson, R. W., Research Engr., University of California, Engineering Materials Bldg., Berkeley, Calif.
Chambers, H. B., Metallurgical Engr., Canadian Atlas Steels, Ltd., Welland, Ont., Canada.
College of the City of New York, Materials Testing Lab., School of Tech., J. S. Peck, Instructor in Charge, 140th St. and Amsterdam Ave., New York City.
Connecticut Agricultural College, W. L. Edel, Dean of Eng., Storrs, Conn.
Curtis, H. A., Chief, Research Dept., Vacuum Oil Co., Paulsboro, N. J.
Depew, H. A., Research Chemist, Am. Zinc Sales Co., Columbus, Ohio.
Dickson, J. B., Director of Research, A. G. Spalding and Bros., Chicopee, Mass.
Dodge, H. F., Member of Technical Staff, Bell Telephone Labs., Inc., 463 West St., New York City.
Dyer, Y. A., Consulting Metallurgist, Alabama By-Products Corp., Birmingham, Ala.
Fager, E. P., Chem. Engr., Dearborn Chem. Co., Room 1912, 310 S. Michigan Ave., Chicago, Ill.
Franklin, A. C., Analyst, 13-17 Percival St., Hong Kong, China.
Furrer, R., Chief Engr. and Director of Research, A. O. Smith Corp., 3533 N. 27th St., Milwaukee, Wis.
Gard, H. M., Chief Chemist, Canadian Industries, Ltd., Windsor, Ont., Canada.
Glendale, City of, Public Service Dept., P. Diederich, Superintendent, 119 N. Glendale Boulevard, Glendale, Calif.
Hoffman, L., Chief Chemist, Cia. Argentina de Cemento Portland, Sierras Bayas, Argentina.
Horlebein, E. W., President and General Manager, The Gibson & Kirk Co., 211 Key Highway, Baltimore, Md.
Huff, L. C., Chief Engr., Universal Oil Products Co., 310 S. Michigan Ave., Chicago, Ill.
Jorgensen, H. C., Chief Chemist, Cia. Cubana de Cemento Portland, Cayo Mason, Cuba.
Kirkwood, David, Jr., Metallurgist, National Smelting Co., Ltd., 95 Gresham St., London, England.
Knable, G. E., Manager, Bureau of Inspection and Tests, Metallurgical Dept., Carnegie Steel Co., Pittsburgh, Pa.
Lawall, C. E., Director, School of Mines, 121 Mechanical Hall, West Virginia Univ., Morgantown, W. Va.
Lingnan University Library, P. Y. Chan, Acting Librarian, Canton, China.

Long Beach Water Commission, Burt Harmon, Hydraulic Engr., 607 City Hall, Long Beach, Calif.
Los Angeles Public Library, Municipal Reference Dept., 530 S. Hope St., Los Angeles, Calif.
Masters, W. C., Technical Adviser, Am. Inst. of Bolt, Nut and Rivet Mfrs., 1520 Guardian Bldg., Cleveland, Ohio.
Mitchell, A. M., President, The Robert Mitchell Co., Ltd., 750 Belair Ave., Montreal, P. Q., Canada.
Moulton, A. G., Vice-President, Thompson Starrett Co., Inc., Room 1028, 104 S. Michigan Ave., Chicago, Ill.
Murphy, A. J., Metallurgist, J. Stone and Co., Ltd., Deptford, London, S. E. 14, England. For mail: 104 Cambridge Road, Teddington, Middlesex, England.
Neal, C. A., President, Union Bridge and Construction Co., 1205 Midland Bldg., Kansas City, Mo.
Oldacre, W. H., Director of Research and Eng., D. A. Stuart and Co., 2733 S. Troy St., Chicago, Ill.
Poole, William, General Superintendent, New York Insulated Wire Co., 50 Parker St., Wallingford, Conn.
Russell, D. A., Chief Chemist, The Youngstown Sheet and Tube Co., Youngstown, Ohio.
Russman, Arthur, Textile Analyst, Howard Clothes, Inc., Brooklyn, N. Y. For mail: 3983 Bliss St. (46th St.), Long Island City, N. Y.
Saueremann, Otto, Structural Engr., Armour and Co. For mail: 2032 W. 103d St., Chicago, Ill.
Shimamoto, Gentoku, Architect, 1530 Geary St., San Francisco, Calif.
Stirton, J. C., Acting Chief Engr., Mfg. Dept., Standard Oil Co. of California, Richmond, Calif.
Swanson, C. S., General Superintendent, Standard Forgings Co., East Chicago, Ind.
Sweet, C. E., General Superintendent, B. B. & R. Knight Corp., Providence, R. I. For mail: West Warwick, R. I.
Thompson, H. E., Anaconda Wire and Cable Co., Hastings-upon-Hudson, N. Y.
Titus, O. W., Consulting Engr., Canada Wire and Cable Co., Ltd., Box 518, Toronto, 2, Ont., Canada.
Tracy, L. E., Chief Chemist, National Tube Co., Gary, Ind.
Vanderlip, A. N., Research Fellowship, Cornell Univ. For mail: 225 Ridgedale Road, Ithaca, N. Y.
Virginia Polytechnic Inst., Eng. Experiment Station, J. W. Whittemore, Professor of Ceramic Eng., Blacksburg, Va.
Voss, W. C., Professor of Bldg. Constr., Dept. of Bldg. Constr., Massachusetts Inst. of Tech., Cambridge, Mass.
Waltenberg, R. G., Engr., The H. A. Wilson Co., 97 Chestnut St., Newark, N. J.
Wickersham, J. H., Civil Engr., 33 N. Duke St., Lancaster, Pa.
Wilkin, R. E., Lubrication Engr., Standard Oil Co. (Ind.), 910 S. Michigan Ave., Chicago, Ill.
Wilson, S. R., Constr. Engr., Universal Oil Products Co., Chicago, Ill. For mail: 803 Bush House, Aldwych, London, E. W. C. 2, England.
Wohrman, C. R., Director of Research, General Plate Co., Forest St., Attleboro, Mass.

Junior Members (7)

Burns, J. F., Chemist, J. D. Adams Mfg. Co., 217 S. Belmont Ave., Indianapolis, Ind.
Hartloff, M. S., Civil Engr., Hamburg, N. Y.
Jeffries, H. O., Jr., Civil Engr., San Salvador, Salvador.
Johnson, C. J., Plant Chemist, The Upson Co., Box 322, Lockport, N. Y.
Kuan, F. C., Civil Engr., Fu Chuan Kuan Civil Eng. Corp., 92 Rue d'Ypres, French Concession, Tientsin, China.
Paschall, E. M. B., Chemist, Crescent Insulated Wire and Cable Co., Taylor St. and Olden Ave., Trenton, N. J.
Sun, H. M., c/o S. C. Sun, Bank of China, Hangchow, Chekiang, China.

George Washington, Engineer

An interesting paper by Edward Grossman appears in the March issue of the *Journal* of the Boston Society of Civil Engineers on "George Washington, Engineer." Many excerpts from Washington's writings and his diary are given. One extract from the latter is of special interest to the members of the A.S.T.M.

"January 8, 1760—Directed an indictment to be formed by Mr. Johnston against J. B. for a fraud in some iron he sold me."

Evidently Washington believed in living up to specifications.

Personals

News items concerning the activities of our members will be welcomed for inclusion in this column.

H. J. FRENCH, since 1929 a member of the International Nickel Co.'s research staff in Bayonne, N. J., has been transferred to the Development and Research Department in New York City to take charge of work in steel and iron.

H. V. CHURCHILL is the new chairman of the Pittsburgh section, American Chemical Society.

C. D. YOUNG, Past-President, A.S.T.M., has been advanced to Vice-President in charge of purchases, stores and insurance of the Pennsylvania Railroad Co. He was formerly Assistant Vice-President.

H. A. DEPEW has accepted a research position with the American Zinc Sales Co., Columbus, Ohio.

P. J. FREEMAN, for many years chief engineer of the Bureau of Test and Specifications of Allegheny County, Pa., has been engaged as consulting engineer by the Pittsburgh Testing Laboratory, with which organization he was previously affiliated. His address will be at the main office, Stevenson and Locust Streets, Pittsburgh, Pa.

ANSON MARSTON, Dean of Engineering at Iowa State College, will retire from his administrative duties on June 30. He will be succeeded by T. R. AGG, now Assistant Dean. Dean Marston has been a member of the faculty at Iowa State for 40 years and has been Dean of Engineering for 28 years. He will continue in charge of certain courses, but will devote much of his time to research work.

R. E. DAVIS, Professor of Civil Engineering, and H. E. DAVIS, Instructor in Civil Engineering, both of the University of California, have been awarded the Leonard C. Wason Bronze Medal for 1931 of the American Concrete Institute for the most meritorious paper dealing with research in the field of concrete and reinforced concrete.

J. W. COX, JR., formerly a partner in the firm of Cox, Fuller and Mauersberger, New York City, is now President of the Sibley Manufacturing Co., Augusta, Ga.

R. R. SYMINGTON has accepted the position of President of the Corporate Steel Products, Ltd., Montreal. He was formerly Managing Director of the Western Steel Products, Ltd., Winnipeg.

S. P. MARLEY, formerly with the Mellon Institute, Pittsburgh, is now in the Research and Development Department of the Vacuum Oil Co., Paulsboro, N. J.

W. A. SHEWHART, Bell Telephone Laboratories, is to give three lectures on "The Role of Statistical Methods in Industrial Standardization" in the Department of Applied Statistics, University College, London, during the first week in May.

F. O. CLEMENTS, President, A.S.T.M., has been elected President of the Detroit Engineering Society.

F. J. TOBIAS is now Research Engineer, New Haven, Conn. He was formerly with the Newton Die Casting Corp.

J. S. ERVIN has been elected President of the Mackintosh-Hemphill Co., Pittsburgh, Pa.

W. F. LOCKHARDT has accepted a position with the Keystone Portland Cement Co. as Manager of the Technical Department. He was formerly Secretary-Director, National Terra Cotta Society, New York City.

A. G. SORO, formerly Captain of Artillery, Fabrica Nacional, Trubia, Asturias, Spain, is now Director, Compania Nacional de Limas, Apartado 73, Ovideo, Spain.

Extensive Demand for Viscosity-Temperature Chart

There has been a gratifying demand for the A.S.T.M. Viscosity-Temperature Chart which was recently approved by Committee E-10 on Standards for publication as a tentative standard. This chart has been given the designation D 341-32 T. More than 80 per cent of the ten thousand copies of the chart which were printed have been sold and distributed. Orders have been practically world-wide, several having been received from foreign countries. It is probable that a second printing of the chart will soon be necessary. The prices charged for this chart are: Single copies, 25 cents; pads of 25, \$1.25; 5 pads, \$5.00.

Publications of the Society

Book of A.S.T.M. Standards.—Issued triennially. The 1930 edition, two parts (2214 pp.), contains 427 Standards adopted by the Society. Issued in two Parts—Part I, Metals; Part II, Non-Metals. Prices, including the subsequent receipt of supplements issued in the intervening years, to non-members: either Part, cloth \$7.50; both Parts, \$14.00; half-leather, \$9.00 and \$17.00. To members for extra copies: either Part, cloth \$5.00; both Parts \$9.00; half-leather, \$6.50 and \$12.00.

Proceedings, Volume 31 (1931).—The Proceedings for 1931 are in two parts: Part I, committee reports with discussions and new and revised tentative standards (1119 pp.); Part II, technical papers with discussions (1027 pp.). Prices to non-members for each part: paper \$5.50, cloth \$6.00; half-leather \$7.00. To members for extra copies—each part: \$3.50, \$4.00 and \$5.00 for paper, cloth and half-leather binding, respectively.

Book of A.S.T.M. Tentative Standards.—The 1931 edition (1008 pp.) contains all of the 180 tentative standards issued by the Society. Prices to non-members: paper \$7.00, cloth \$8.00. To members: \$4.50 and \$5.50, respectively.

Separate Standards and Tentative Standards.—Separate copies of all standards and tentative standards are available. The price is 25 cents for a single copy and in lots up to 24; for 25 to 99 copies, 20 cents each; 100 to 250 copies, 15 cents each. Larger quantities are furnished at lower prices.

Complete Sets of Proceedings from 1902 to 1931, inclusive (with the exception of Vols. I and III). Prices recently sharply reduced. Special prices are made to members for extra copies and for complete sets. Bound in paper, cloth or half-leather.

Special Publications

Indexes to Proceedings.—Contain both an author and a subject index of committee reports and technical papers and discussions. Index to Vols. I-XII, 1898-1912 (158 pp.). Prices to non-members \$1.50 in cloth, \$2.00 in half-leather; to members: \$1.00 in cloth, \$1.50 in half-leather. Index to Vols. XIII-XX, 1913-1920 (189 pp.). Index to Vols. 21-25, 1921-1925 (224 pp.). Index to Vols. 26-30, 1926-1930 (251 pp.). Prices for each of the three latter indexes, to non-members: \$2.50 in cloth, \$3.50 in half-leather; to members: \$1.75 in cloth, \$2.75 in half-leather.

Symposium on Effect of Temperature on the Properties of Metals.—Comprises 27 valuable papers, with extensive discussion, presented in a joint symposium of A.S.M.E.-A.S.T.M. at 1931 Annual Meeting, Chicago. Completely indexed; special introduction summarizes papers; extensive bibliography. 826 pp., illustrated, cloth bound. Price to non-members, \$6.00. To members A.S.T.M., A.S.M.E., \$5.50. Special prices on quantity orders.

Symposium on Malleable Iron Castings.—A reprint of joint symposium of A.F.A.-A.S.T.M. held in 1931. Gives authoritative data in concise form on the properties of malleable iron and castings produced by best modern methods. 122 pp., illustrated, heavy paper binding. Price, 75 cents.

Tables of Corrosion-Resistant and Heat-Resistant Alloys.—Eleven large tables giving chemical compositions and physical and mechanical properties of a large number of alloys—both ferrous and non-ferrous. Special binder. Price, \$1.50.

Symposium on Welding.—Comprises 11 papers, with discussion, presented at 1931 Pittsburgh Regional Meeting. Extensive treatment of welding processes and weld testing. 152 pp., illustrated, cloth binding. Price to non-members, \$1.75; to members, \$1.25.

Pamphlet on Electrical Insulating Materials.—Contains 1931 Report of Committee D-9 and all A.S.T.M. specifications and test methods relating to electrical insulating materials. 212 pp., paper binding. Price, \$1.25.

Selected A.S.T.M. Standards for Students.—Two publications of much help to students in work involving engineering materials. Specifications and test methods included were chosen in consultation with prominent educators. Standards for Engineering Students (intended chiefly for civils and mechanicals), 172 pp. Standards for Students in Chemistry, Chemical Engineering, and Metallurgy, 184 pp. Heavy paper binding. Price of each, 50 cents.

1931 Report of Committee A-5 on Corrosion of Iron and Steel.—Gives results of inspection of copper and non-copper bearing sheets in atmospheric and immersion tests. Report of atmospheric exposure tests of galvanized material and a progress report on embrittlement investigation included. Price, 50 cents.

A List of Alloys.—Comprises a revised list prepared by William Campbell, Professor of Metallurgy, Columbia University. Includes the physical properties of typical alloys. 65 pp. Price, \$1.50 in paper, \$2.00 in cloth.

Inquiries and orders should be directed to:

AMERICAN SOCIETY FOR TESTING MATERIALS
1315 Spruce Street, Philadelphia

PROFESSIONAL CARDS

PROFESSIONAL CARDS will be accepted for inclusion on this page from Consulting Engineers, Metallurgists, Chemists, Testing Engineers and Testing Laboratories.



EKROTH LABORATORIES
Incorporated
Utilization of Wastes
and Development of By-Products
Economic Surveys and Reports
Inspections and Tests
Chrysler Bldg., New York, N. Y.
Member Association of Consulting
Chemists and Chemical Engineers

FROEHLING & ROBERTSON, INC.
Inspection Engineers and
Chemists

RICHMOND



NEW YORK



Inspection and Testing
of
Paving, Building and
Engineering Materials
Fuels, Oils and Metals
Standard Equipment
Monroe L. Patzig
Consulting Engineer
210 11th St., Des Moines, Ia.

A. W. Williams Inspection Company
Timber and Creosoting Inspection
Service

Analysis of Wood Preservatives

MOBILE, ALABAMA

Inspectors for Assignments at all Plants

SOUTHWESTERN LABORATORIES

Consulting, Analytical Chemists and
Chemical Engineers

Inspections, Testing and Chemical Work
Fort Worth, Dallas, Houston, Amarillo
and
San Antonio, Texas

**ANALYTICAL
SPECTROGRAPHIC
PHYSICAL
CORROSION**
Consulting Metallurgists
LUCIUS PITKIN, Inc.
47 FULTON STREET NEW YORK G

Metallographers Chemists

**NEW YORK TESTING
LABORATORIES**

80 WASHINGTON STREET, NEW YORK CITY

Consulting and Research Engineers

Mechanical, Physical and Electric Tests, Inspections

Le "Controle Technique"

INSPECTION

and TESTING OF MATERIALS

Offices in Every Metallurgical Center in Europe
Telegrams: "Controlono"

PARIS, 12 RUE DE MIROMESNIL

ABBOT A. HANKS, Inc.

Engineers and Chemists

Consulting, Inspecting, Testing

Physical and Chemical Laboratories

624 Sacramento Street

SAN FRANCISCO, CALIF.

**ROBERT W. HUNT COMPANY
ENGINEERS**

Inspection—Tests—Consultation

CHEMICAL, PHYSICAL, METALLURGICAL, X-RAY,
CEMENT AND CONCRETE LABORATORIES

General Offices and Laboratories

22nd Floor, Insurance Exchange, Chicago
All Large Cities

COLBY AND CHRISTIE

Registered Inspection Engineers

Steel—Cement—Concrete

Special Investigation

Perry Building - Philadelphia, Pa.

Ledoux & Company, Inc.

Chemists, Assayers, Engineers
Samplers and Weighers155 SIXTH AVE.
NEW YORK, N. Y.Member Association of Consulting Chemists
and Chemical Engineers

WEISS AND DOWNS, Inc.

CHEMICAL ENGINEERS

SPECIALISTS IN
BITUMINOUS MATERIALS

J. M. WEISS, MEMBER, A. S. T. M.

50 E. 41st Street, New York City

Member Association of Consulting Chemists
and Chemical Engineers

MORGAN T. JONES COMPANY, Inc.

Inspection, Tests and Consultation

General Offices

228 N. La Salle St., Chicago, Ill.

Physical and Cement Laboratories. Inspection of
rails and rail fastenings. Structural Steel for
Bridges and Buildings, etc.

Twenty-eight Years of Satisfactory Service

The Detroit Testing Laboratory

ESTABLISHED 1903

Inspection

Chemical and Physical Testing
Consultation and Research

Special Reports

554 BAGLEY AVE. DETROIT, MICH.
Member National Engineering Inspection Association

GULICK-HENDERSON CO.

Inspecting Engineers, Metallurgists
Physical and Chemical LaboratoriesNew York City—19 West 44th Street
Pittsburgh—524 Fourth Avenue
Chicago—431 South Dearborn Street
St. Louis—4564 St. Louis Avenue
Dusseldorf, Germany

HILDRETH & COMPANY, Inc.

Established 1887

Consulting and Inspecting Engineers

122 Greenwich Street, New York City

Represented at all important manufacturing centers

Consultation on designs, specifications and
construction. Inspection, tests and analyses
of all classes of engineering and commercial
materials.

TESTING

ELECTRICAL
PHOTOMETRIC
MECHANICAL
CHEMICALELECTRICAL TESTING LABORATORIES
80th St. and East End Ave., New York

Established 1836

BOOTH, GARRETT & BLAIR

Analytical and Consulting Chemists
Samplers and Weighers

406 LOCUST ST., Philadelphia, Pa.

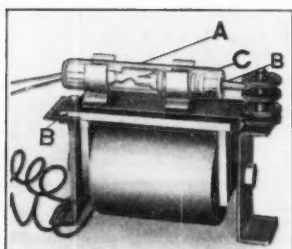
The Oldest Commercial Laboratory
in America

Pittsburgh Testing Laboratory
PITTSBURGH

Analysis - -  - Inspection
Testing - - - - - Research

Branch Offices in the Principal Cities

**Safe
•
Sure
•**



Super - Sensitive

You can turn over constant-temperature responsibility to the NEW AMINCO Super-Sensitive Relay and forget about it.

This new vacuum contact relay breaks 1350 Watts on a coil consumption of four milliamperes at six volts. Here is a unit that combines sturdiness, long life and low price with extreme sensitivity. Impervious to dust and dirt, safe where open spark is dangerous, this instrument can be mounted in any position.

Write for Details and Prices TODAY.

AMERICAN

Instrument Company, Inc.

774 Girard St., N. W., Washington, D. C.

Bulletins describing a multitude of laboratory apparatus, devices for testing of oils, rubber, cement, paper, etc., mailed on request.

ASPHALT TESTING APPARATUS

IN ACCORDANCE WITH

A. S. T. M. SPECIFICATIONS

*Precision
Penetrometer*

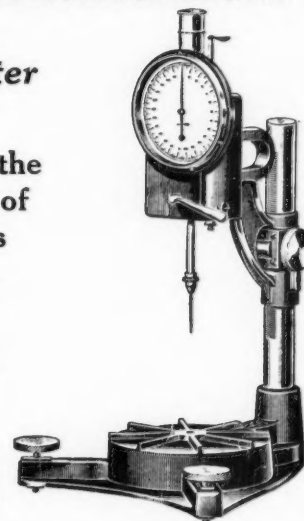
for

Determining the
Consistency of
Bituminous
Materials

**Price
\$110.00**

*Ask
for*

Catalog R 11-TM



No. 387

CENTRAL SCIENTIFIC COMPANY

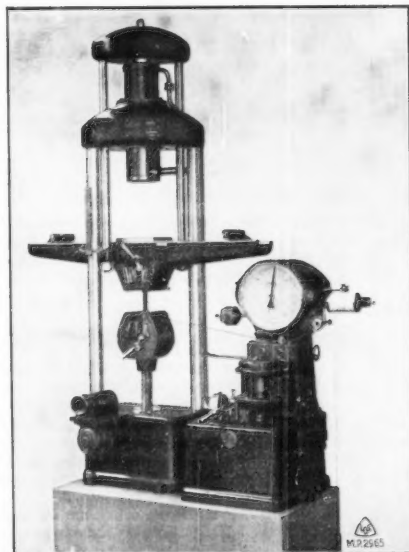
LABORATORY  SUPPLIES

Apparatus  Chemicals

NEW YORK - BOSTON - CHICAGO - TORONTO - LOS ANGELES

LOSENHAUSEN

Hydraulic Universal Testing Machine



Small Model for Load Ranges
from 10,000-40,000 lb.

For tensile, compression, buckling, transverse, folding and shearing tests.

With pendulum load-registering device, autographic chart and constant load holding appliance.

Very sturdy construction, accurate and easy to operate.

Ask for references and special catalogue.

Sold exclusively through

ALFRED

200 FIFTH AVENUE

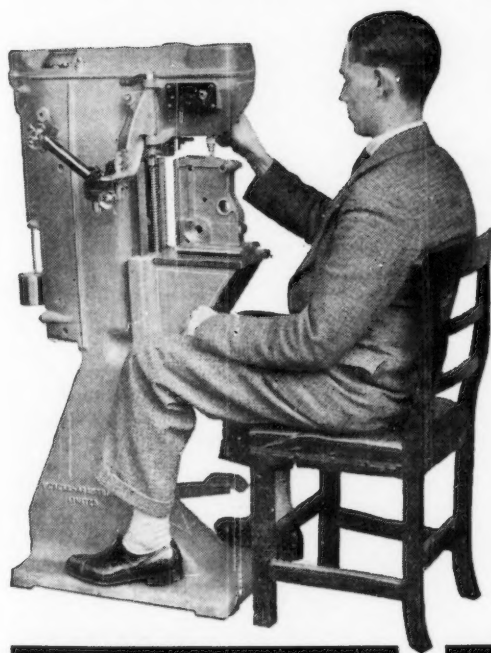


SUTER

NEW YORK

THE VICKERS HARDNESS TESTING MACHINE

INSTALLED IN THE LEADING RESEARCH LABORATORIES



The only machine giving proportional readings throughout the metallurgical range with accuracy.

Corrected Brinell figures obtained through all ranges. The load is applied, maintained and released automatically. There is no damage to finished work and no risk of error in readings. It is applicable to large or small pieces and provides a means of rapid checking to specified limits.

In research work into the constitution and properties of nitrided steel cases, after a trial of other hardness testing machines, this machine was selected as the most suitable, as besides the hardness it indicates the friability of the case, which is a measure of its wearing properties.

UNITED STATES AGENT FOR
THE VICKERS HARDNESS TESTING MACHINE

THE RIEHLE BROS. TESTING MACH. CO.
1424 N. Ninth St., Philadelphia, Pa.

All United States territory including Alaska, Hawaii and the Philippine Islands

CANADA:

Messrs. WILLIAMS & WILSON, 544 Inspector Street, Montreal, P. Q.

NO STEEL OR ALLOY IS TOO HARD FOR
TESTING ON THE VICKERS

NOW READY!

Index to Proceedings, 1926-1930

A comprehensive index of the many subjects discussed in papers and reports presented at A.S.T.M. annual meetings over the five-year period, 1926-1930, which are published in the *Proceedings*, Vols. 26-30.

The author index lists the papers and discussions attributed to each author, and committee reports he has signed.

Invaluable to research workers, bibliographers, and all who have, or may have occasion to use, the A.S.T.M. *Proceedings*.

251 pp.; page size, 6 by 9 in.; bound in cloth or half-leather. Cloth, \$2.50; Half-leather, \$3.50.

Order from

American Society for Testing Materials
1315 Spruce Street, Philadelphia, Pa.

SCOTT TESTERS

STANDARD OF THE WORLD

*Testing Machines for Laboratory
and Routine Purposes*

Machines for Determining

strength, stretch and fatigue points of cloth, cordage, fibers, insulating materials, leather, metal, rubber, silk, tire cord, ligatures, wire, paper, etc. Also rubber abrasion and flexing machines.

We are sole owners of the patents covering testing machines operating on the *INCLINE PLANE PRINCIPLE*.

We manufacture the "SERIGRAPH," a tensile test machine for silk and other textiles. Both the name "Serigraph" and the machine are fully protected by U. S. Patents.

HENRY L. SCOTT COMPANY
PROVIDENCE, R. I.

ROCKWELL HARDNESS TESTER

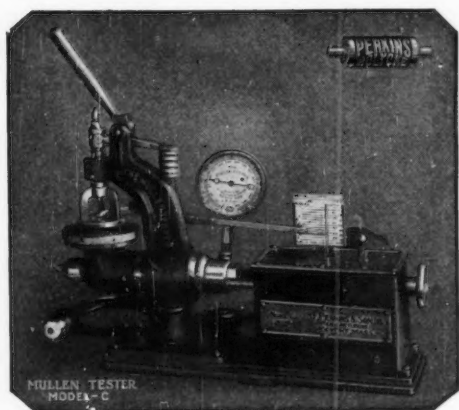
No feature of the Rockwell has been more important to testing than the fact that it permits testing with real accuracy on industrial shapes as well as on flat, polished, laboratory specimens.



WILSON MECHANICAL INSTRUMENT CO., INC.

(New corporate name of Wilson-Maeulen Co.)

383 Concord Avenue, New York



**M
U
L
L
E
N**

Perkins Mullen Tester MODEL C

While ascertaining the bursting strength of your specimen, this tester also records on the deflectograph card the elongation or stretch of the material under test.

Write for Complete Information

B. F. PERKINS & SON, Inc.

Engineers and Manufacturers
HOLYOKE, MASS., U. S. A.

MACMICHAEL VISCOSIMETER

**For Quick and Accurate
Viscosity Tests**

See A.S.T.M. D 115-31T

Recommended particularly for testing insulating varnishes, also for other varnishes, greases, heavy oils, liquid paint, asphalt and similar materials.

ADVANTAGES

Quick and accurate results. Easily cleaned. Portable. Durable. No technical experience required.

In ordering, give details of electrical current.

WRITE FOR BULLETIN No. 500

EIMER & AMEND

Est. 1851

Inc. 1897

Headquarters for Laboratory Apparatus and
Chemical Reagents

NEW YORK, N. Y.

Third Ave., 18th to 19th St.

SOUTHWARK'S NEWEST ...



IT SHOULD BE IN EVERY TESTING ENGINEER'S LIBRARY

DESCRIBED—the evolution of hydraulic testing machines down through the years, to the latest, largest universal machine in the world. Detailed—instruments, indicating and recording; the load producing mechanisms; controls; gripping mechanisms; etc. Outlined—modern practice in utilization. A collection of standard and special testing machines and instruments unrivaled in scope and development.

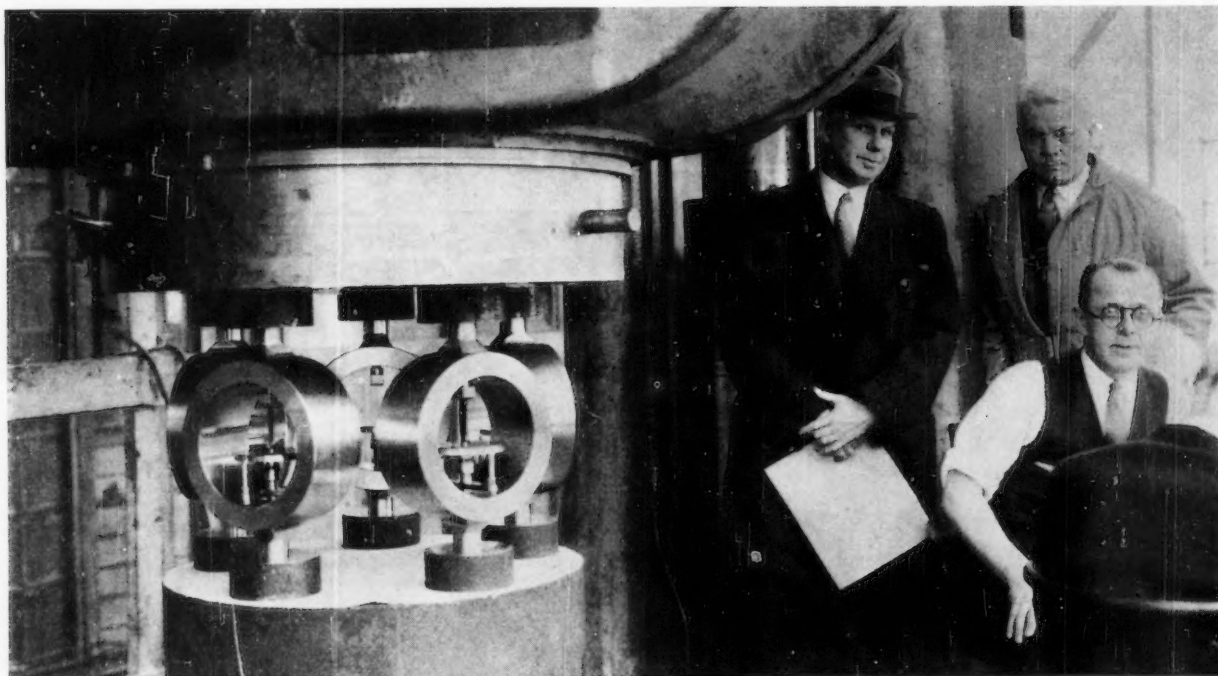
Profusely illustrated, including charts and tables showing capabilities, dimensions, weights. Concisely written as a test book that traces the progress of all that is outstandingly modern in thought, equipment and in practice.

Typical of Southwark—headquarters for testing equipment for practically every mechanical purpose in engineering, construction, transportation and industry.

Write for Bulletin No. 28. Sent on request.

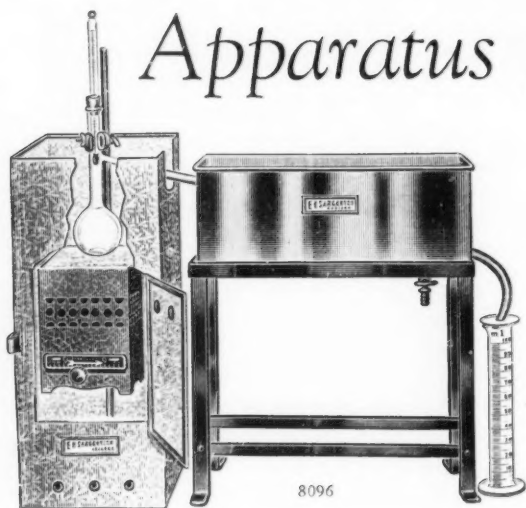
BALDWIN - SOUTHWARK CORPORATION
SOUTHWARK DIVISION, PHILADELPHIA, PA.

SOUTHWARK



(Courtesy Southwark-Emery)

The Emery-Tatnall big Universal Testing Machine built by the Baldwin-Southwark Corp., Phila., for The University of California being checked with Whittemore-Petrenko Proving Rings as made by the Morehouse Machine Co., York, Pa.



No. 8096 oil apparatus, distillation, electric, with rheostat control for the distillation of natural gas gasoline in accordance with A. S. T. M. method D216-30, Sargent design, complete with A. S. T. M. low distillation thermometer, for 110 volts.....\$42.50

Apparatus for A. S. T. M. tests

Official Specifications

We offer and have on hand for prompt delivery a complete line of equipment strictly in accordance with official specifications for carrying out standard A. S. T. M. determinations applying to highway materials and petroleum testing, metal analysis, gas analysis, cement testing, etc. All equipment in this group which we offer not only conforms to all official specifications, but is designed in accordance with our own standards for serviceable laboratory appliances. Catalogs mailed on request.


E. H. SARGENT & CO.
Laboratory Supplies

155-165 E. Superior Street, Chicago

(4120)

AMSLER MACHINES

For Testing Cement and Concrete



Amsler test presses, in all capacities from 60,000 to 1,000,000 lb.; hand or motor drive; with either primary or secondary gauge, both *indestructible*; various ranges for each machine; constructed for tests with uniform speed of movable head and for tests with uniform rate of loading; for standard static tests, for special tests with automatically sustained loads, or for the application of rapidly repeated stresses.

Amsler calibrating boxes for checking the calibration of test presses up to 1,000,000 lb.; guaranteed accurate to within $1/2\%$ for all loads between 10 and 100% of the capacity of each box.

Amsler apparatus for investigating the water permeability of cement and concrete; various types; for 1 or 6 simultaneous tests.

Amsler autographic recorder for studying the setting-time characteristics of cement, etc.


Amsler apparatus for measuring the shrinkage of cement and concrete.

Amsler machine for determining the resistance of cement and similar paving materials to abrasion ("wear").

Amsler mirror extensometer for measuring small deformations of cement or concrete cylinders under compression.

In addition to the testing appliances mentioned, the Amsler Works make special machines for testing beams and plates under distributed loads, for testing stones, timber, and other building materials.

All Amsler machines excel by their sound design, insuring accuracy and *constancy* of calibration, indestructibility of the operating and load measuring mechanism, and simplicity of operation. The construction of all Amsler machines combines great ruggedness with finest workmanship of all parts. Their long service gives to these machines an unusual economy. Detailed descriptions of the various testing appliances will be gladly furnished, upon request.



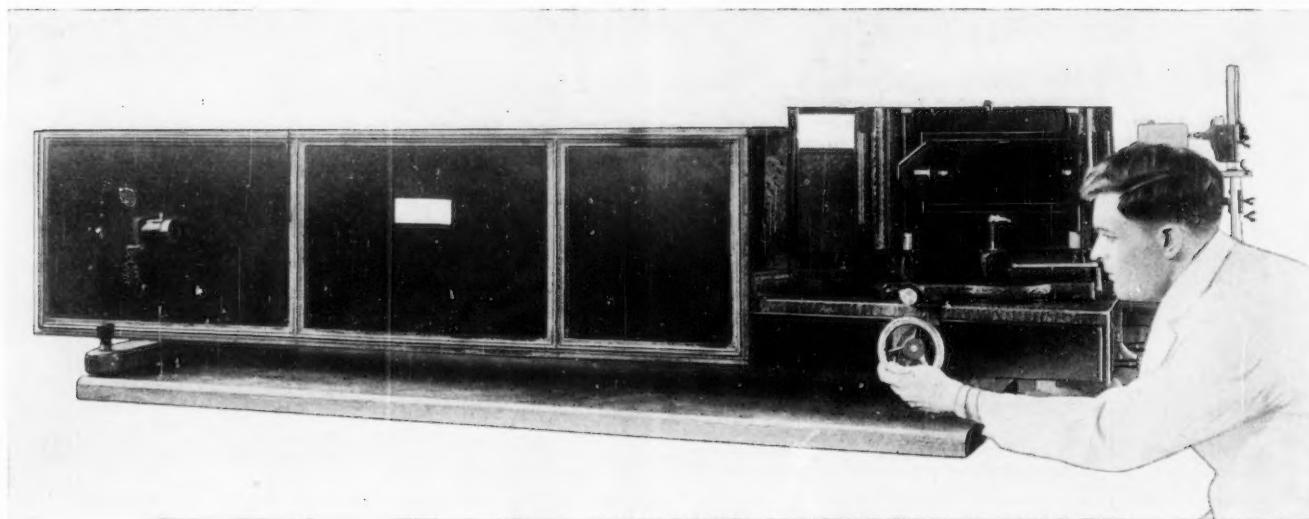
HERMAN A. HOLZ

Testing Engineer

167 EAST 33RD STREET

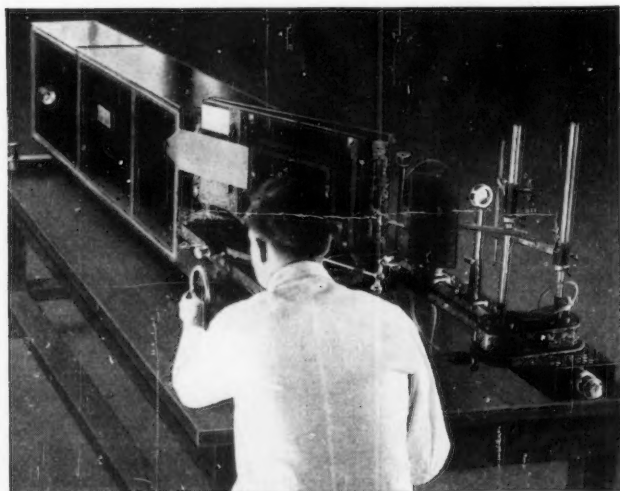
NEW YORK

B & L Announces... The Large Littrow Type Spectrograph



The new B & L Quartz Spectrograph, Littrow Type. Note the compactness and rigid construction. Length over all 8' 10". A completely replaceable set of optical parts, made of flint glass of refractive index 1.625, is offered for those whose work involves much use of the long wave-length portion of the spectrum.

THE announcement of the new B & L Spectrograph is of interest to every metallurgist. This instrument permits effective, accurate spectral analysis of alloy steels, tungsten carbide alloys, stellite and all other materials yielding spectra in which the lines are crowded. This is due to the high



Ease and convenience of operation distinguish this new instrument. The operator makes all adjustments that must be made in use quickly and easily from this convenient position.

resolution, great linear dispersion and fine optical performance of this Spectrograph by which the most complex spectra are effectively resolved and dispersed. Plates show exceptional definition and complete freedom from fog and reflection.

The laboratory with this new instrument is equipped to handle *any* spectro-analytical problem that may arise.

Careful designing has made the operation of this new instrument easy and rapid. All adjustments that must be made in use can be made by the operator from his position at the plate holder end. The permanently aligned, rigidly mounted illuminating system is likewise a timesaver.

Routine analysis and control work, both qualitative and quantitative, is made easier, more economical and decidedly more valuable and effective by this new B & L Quartz Spectrograph.

Research men, control men, production men and plant executives will find the full information on this remarkable new instrument of vital interest.

◆ WRITE TODAY FOR COMPLETE INFORMATION ◆

BAUSCH & LOMB OPTICAL CO.
636 ST. PAUL ST. ROCHESTER, NEW YORK

CONVENIENCE in HARDNESS TESTING Makes for Speed, Economy, ACCURACY

The MONOTRON has now come into general use by discriminating establishments because:

- A. It has the required Adaptability and convenience in operation upon which speedy and satisfactory service depends.
- B. Two Dials show more than any one Dial tester. Solving problem of application to all known materials.

Not Most Expensive Machine to Install.

For additional information see our Bulletins M-3, M-5.
Free upon request.



The SCLEROSCOPE, 100% Portable

For a Good Single Dial Tester We Offer The SCLEROSCOPE

(Latest Improved)

Quick, accurate, more popular than ever. It has the only simplified (Centigrade) scale which is understood and quoted the world over. The only tester that is 100% portable, and operative on work of unlimited size. Accurate conversions to Brinell. Bulletins S No. 22 and S No. 30 mailed free.

For Rubber Testing, the DUROMETER and ELASTOMETER have become World Standards.

Bulletin R-4 describes them, free.

THE SHORE INSTRUMENT MFG. CO.

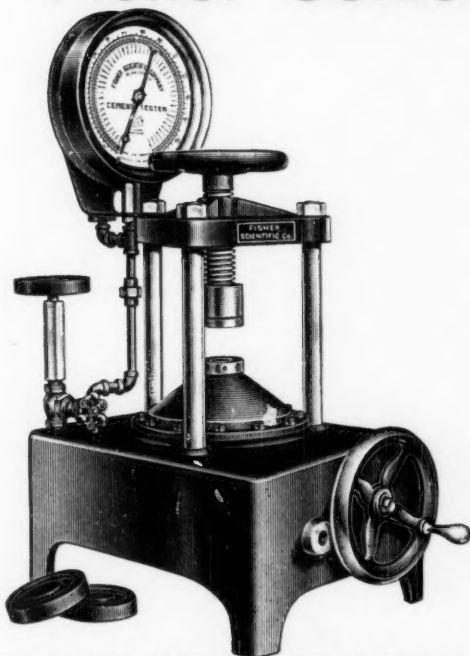
VAN WYCK AVE. & CARLL ST.

JAMAICA, NEW YORK, N. Y.



The MONOTRON

Fisher Cement Testing Apparatus



THE FISHER COMPRESSION TEST MACHINE
ACCURATE AND PORTABLE—PRICE \$350.00
(For 2-in. cubes and 2 x 4-in. cylinders)

THE construction value of cement and cement mixtures can be foretold by the compression strength test.

This information can be obtained with speed and accuracy by the Fisher Compression Test Machine.

This machine is a simple and accurate apparatus for testing the values of different cements—the quality of fine aggregates—the suitability of a sand—the compression strength at different ages.

The Fisher Compression Test Machine is supplied with a two-scale gage. One scale registers the total pressure and the other the load per square inch, for the standard 2 by 4-in. cylindrical test piece.

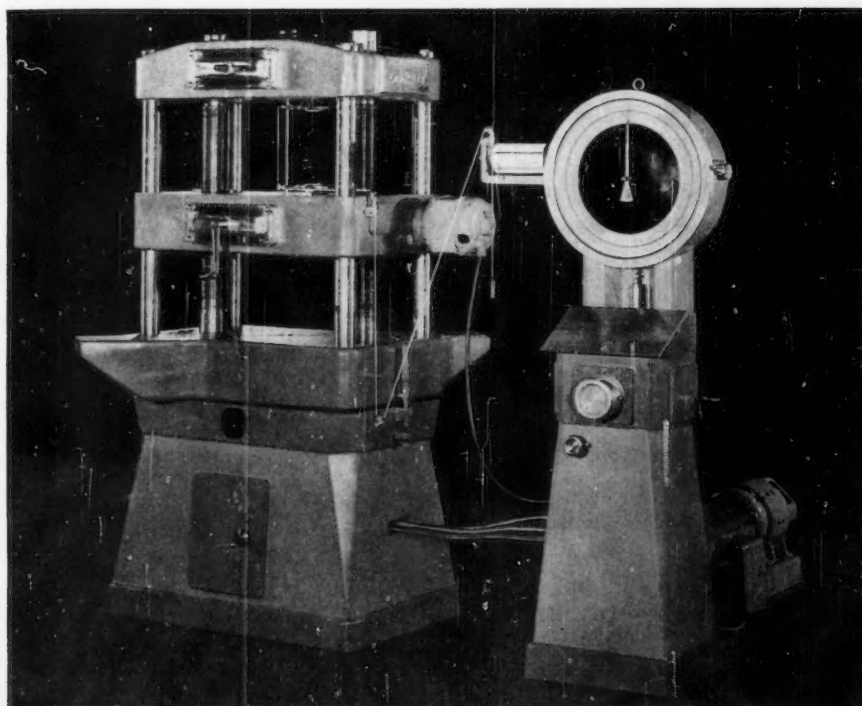
A patented feature, a floating ram with a rubber diaphragm, avoids friction and prevents leakage.

A. S. T. M. APPARATUS A SPECIALTY

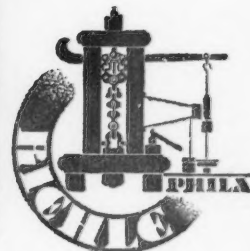
FISHER SCIENTIFIC
COMPANY

PITTSBURGH, PA.

709-717 FORBES STREET

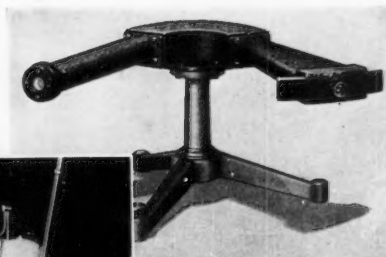


Riehle Precision Hydraulic



RIEHLE has found out What To Do with the Depression

EACH PERIOD of depression brings with it the opportunity for men to learn of what stuff their neighbors are made. Riehle welcomes your judgment—for during the trying days we have all been experiencing, Riehle has courageously pushed ahead with a development program such as has never before been attempted in the testing machine field. • The new Riehle Precision Hydraulic Universal Testing Machine is the foremost result of this program. Radically differing from its predecessors, yet built on the soundest and most thoroughly recognized of engineering principles, it offers the engineering and scientific world an opportunity to establish new standards in physical testing. • A booklet fully describing it will soon be issued. Reserve your copy now.



Steelescope



Brinell

The Steeloscope pictured above will assist you in determining the alloy elements in steel. And the Production Brinell Machine at the left, though hand operated (with consequent low cost), is faster in operation than most motor-operated machines.

RIEHLE BROS. TESTING MACHINE CO.
1424 NORTH NINTH STREET, PHILADELPHIA, PA.

